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Observations on Gastric Decompression and Intravenous Saline Administration in Acute Grass Disease

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Introduction

Acute grass disease shows certain similarities from both biochemical and pathological aspects to acute intestinal obstruction in man and other animals. Thus the blood picture, especially in the later stages, is mainly one of marked anhydraemia, with a tendency for both sodium and chloride to decrease; and the outstanding *post-mortem* finding is that of a stomach and small intestine enormously distended with fluid, whilst the large intestine contains varying amounts of dry ingesta.[1] This accumulated fluid contains considerably greater amounts of sodium and chloride than is usually present,[2] and it seems likely that it is mainly derived from the normal secretions of the upper reaches of the alimentary canal, although apart from the material in the colon, there is no obvious impediment to the onward passage of such material. Its presence and composition, moroever, go far to explain the blood changes mentioned above.

In the treatment of acute obstruction in man, intestinal decompression and intravenous saline administration have been found of considerable value; in some cases the relief of distention and the replacement of electrolytes have in themselves been sufficient, whilst in others operative interference has been rendered safer.[3] In acute grass disease in horses, however, attempts to relieve distension have hitherto been limited to sporadic efforts usually by siphonage—although it is known that this method is unsuitable for emptying a tube containing fluid when gas is present—and electrolyte replacement on any large scale has seldom, if ever, been tried. It was felt, therefore, desirable, if at all feasible, to observe the effects on grass disease cases of continuous decompression by suction combined with the steady administration of normal saline by the intravenous route.

Methods

In the early stages the system used was based on that devised by Wangensteen[4] for gastro-duodenal decompression in man. This method has the benefit of measuring both fluid and gas removed from the alimentary canal, but it was found unsuitable for the type of material aspirated from the stomach of the horse which tended to block the system. It was decided, therefore, to give up any idea of measuring the amount of gas liberated and to concentrate on the relief of distension with a continuously acting electric pump for suction, a carboy being interposed between the vacuum pump and stomach tube to act as receptacle for the contents aspirated, whilst a stomach pump connected by a Y-shaped side arm could be used to administer fluids or clear the tube when blocked.

Saline administration was given from a 10-litre container suspended 3 to 4 feet above the animal into the left jugular vein, a screw clip being used to regulate the rate of flow.

Results

Case 1

History.—A five-year-old Clydesdale mare, at grass, was first noticed ill on the evening of May 22nd, 1946, and diagnosed as a case of acute grass disease on the morning of the 23rd. By the time transport was obtained, the animal had collapsed in its stall and was loaded only with the greatest difficulty.

Clinical Data and Treatment.—(Fig. 1—overleaf). The animal arrived at the College at 4 p.m. and, when examined a couple of hours later, it was found to be dull with occasional mild spasms of abdominal pain. The pulse-rate was 90 per minute, the respiratory-rate 12, and the rectal temperature 104° F. Typical patchy sweating and slight muscular tremors were noticed. A stomach tube was passed and 15 litres of fluid siphoned off immediately. The hydrostatic suction apparatus mentioned above was applied and another 5 litres of fluid and considerable quantities of gas removed during the evening. About 12 litres of 5 per cent. glucose in 1 per cent. saline were given intravenously and by 10 p.m. the animal was much brighter with the sweating gone and the pulse-rate down to 66. The animal was then left for the night after dismantling the apparatus.

Examined at 9 a.m. on the 24th, the animal was again very dull and dejected, with a pulse of 120, respiratory rate of 15 and temperature of 101° F. Sweating was again present, but no sign of colic. On passing the stomach tube, about 15 litres of greenish fluid siphoned off and another 10 litres were aspirated during the next few hours. Slow intravenous administration of 1 per cent. saline was started, and the animal was left alone about midday. At 3 p.m. the suction apparatus was found to be choked by a large ascarid which had stuck in the Y-shaped junction. The horse was still very dull with a weak and very fast pulse—136 per minute. The suction apparatus was cleared and put in action again and some 20 litres of fluid and considerable quantities of gas removed in the course of the evening. Saline administration was continued very slowly and by 9 p.m. the animal was brighter and its pulse-rate had fallen to 90. The continuously acting electric pump was then brought into action and left *in situ* as well as the intravenous saline which was cut down to as slow a rate as possible.

At 7 a.m. next morning (25th) it was found that another horse had got loose in the stable and broken the glass Y-piece of the suction apparatus; the saline hopper had also gone dry and the trocar was blocked with clotted blood. The animal was again dull and dejected with a pulse rate of 120. The apparatus was repaired, 32 litres of fluid sucked out and 10 litres saline (1 per cent.) given intravenously. During the forenoon another 28 litres of fluid were removed and about 20 litres of glucose-saline injected. By midday the animal was again much brighter and showed such keen interest in the emptying out of the container that it was tried with a drink which, to our surprise, it consumed eagerly, although earlier it had refused water or had only dabbled in it without any attempt at swallowing; about 20 litres of water were taken, though much of this was immediately removed by the vacuum pump. The pulse rate at this time was 86 per minute.

During the afternoon another 30 litres of fluid were removed by stomach tube and the animal received intravenous glucose-saline amounting to 20 litres. By 5 p.m. the pulse rate had dropped a further ten beats per minute. The animal was then given another drink and consumed about 25 litres. During the evening 45 litres of saline were injected intravenously and the animal drank 20 litres of water. At 8.30 p.m. it was given a soap and water enema, the bulk of which was ejected forcibly almost immediately. Over 30 litres of fluid were aspirated during the evening, and by 10 p.m. the pulse rate had fallen to 56. The animal was now much brighter and looked to all intents a normal horse, though no sign of any intestinal movement could be detected on auscultation and rectal examination showed that impaction was still present. The apparatus was then removed and the horse given a short spell of brisk walking exercise, after which it was given a small feed of oats and bran, which it ate greedily. It also drank two buckets of water and looked for more. It was then bedded down and left for the night.

The following morning (26th) the animal was not examined till about 10 a.m., when it was found to be much worse—dull and dejected with laboured respirations and profuse sweating. The mucous membranes which had been bright and clear 12 hours before were now intensely injected. The heart-rate was now 130 per minute. On passing the stomach tube about 25 litres of fluid siphoned off and the animal was given a rapid injection of 22 litres of saline and a small drink, about 5 litres. At midday, however, the animal went down so we disconnected the whole apparatus thinking the end was near. To our surprise, however, it got up again of its own accord about 2 p.m., when the treatment was reapplied, 25 litres of fluid being removed and 36 litres of saline given intravenously. It was now decided to intensify the procedure and to carry it on continuously. In the evening 27 litres of saline were injected and the animal drank 13 litres of water; during this period 30 litres of fluid were aspirated. By 10 p.m. the animal was easier and the pulse rate had dropped to 68. The process was continued during the night, when 112 litres of saline were injected and 30 litres of water were drunk. During this time 66 litres of fluid collected in the carboy.

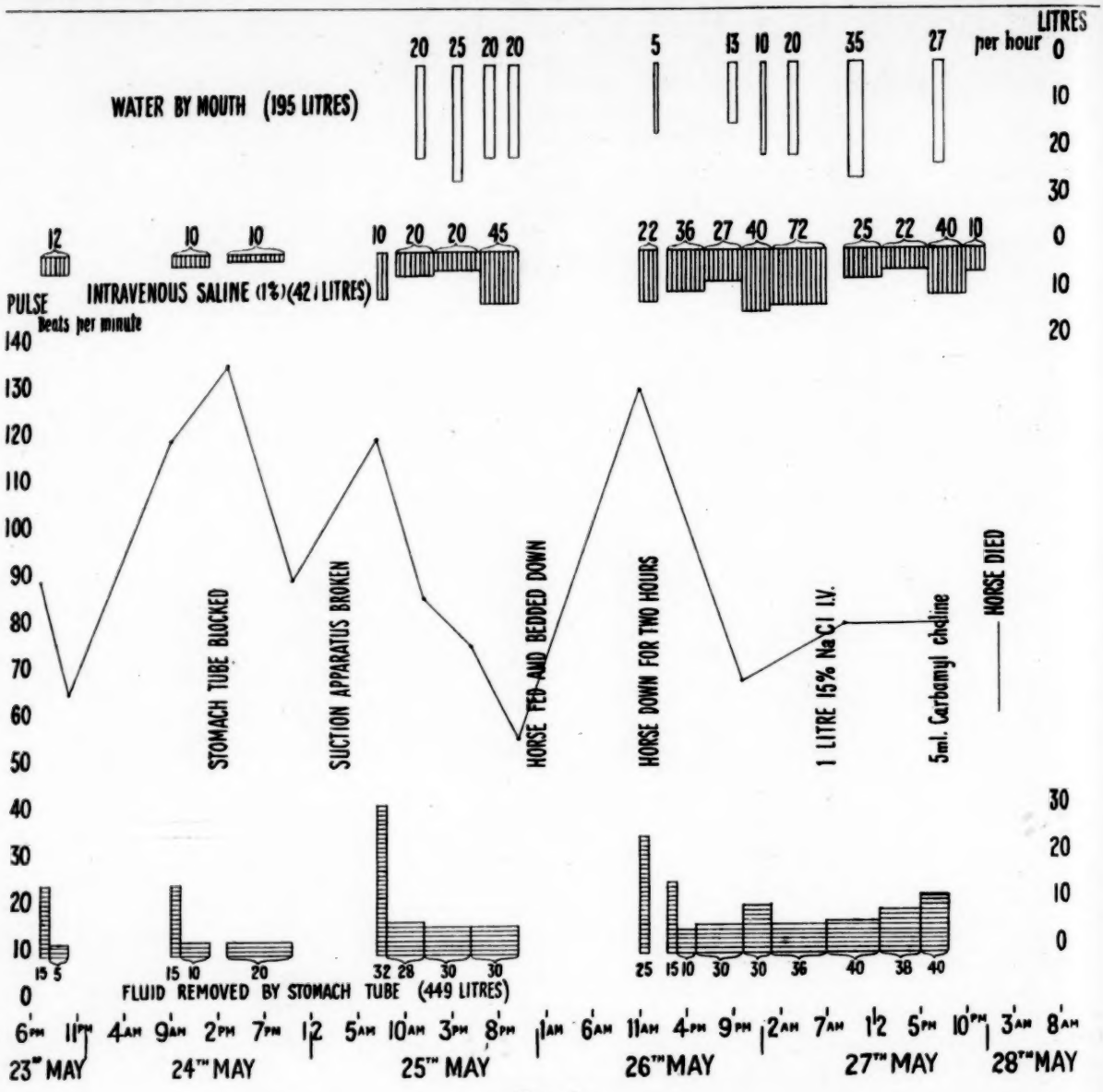
WATER BY MOUTH (195 LITRES)
20 25 20 20
5 13 10 20 35 27
LITRES per hour
0 10 20 30
INTRAVENOUS SALINE (1%) (42½ LITRES)
12 10 10
10 20 20 45
22 36 27 40 72
25 22 40 10
0 10 20
PULSE
Beats per minute
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
STOMACH TUBE BLOCKED
SUCTION APPARATUS BROKEN
HORSE FED AND BEDDED DOWN
HORSE DOWN FOR TWO HOURS
1 LITRE 15% NaCl I.V.
5ml. Carbamyl choline
HORSE DIED
30 20 10 0
15 5
15 10 20
32 28 30 30
25 15 10 30 30 36 40 38 40
FLUID REMOVED BY STOMACH TUBE (449 LITRES)
6PM 11PM 4AM 9AM 2PM 7PM 12 5AM 10AM 3PM 8PM 1AM 6AM 11AM 4PM 9PM 12AM 7AM 12 5PM 10PM 3AM 8AM
23RD MAY
24TH MAY
25TH MAY
26TH MAY
27TH MAY
28TH MAY

FIG. 1

In spite of this drastic action—or perhaps because of it—the animal was slightly duller when examined at 9 a.m. on the 27th, and the pulse had risen to 80. It was obviously losing condition and no sign of any bowel movement could be detected. Aspiration and injection were continued as before, 118 litres being removed in the course of the day and about 100 litres of saline injected; during this period the animal also consumed over 60 litres of water.

As it was obvious that the horse was losing condition several efforts were made during the day to stimulate bowel movement. One litre of 15 per cent. saline given intravenously at 11.30 a.m. produced uneasiness and slight colicky pains, which passed off in about 30 minutes. A soap and water enema given in the afternoon was mainly retained, but produced no result. Five ml. of carbamyl-choline in one batch of 10 litres of perfusion fluid produced uneasiness and the animal showed an inclination to lie down. The same dose injected direct into the jugular about 9.30 p.m., produced spectacular results as in a few minutes the animal was staggering in the stall, salivating profusely and showing signs of abdominal pain. The pulse at this time dropped temporarily to about 40 per minute. The animal gradually recovered, and by 10 p.m. was much as before. Little more fluid came away after this, and although the saline administration was continued the animal collapsed about 1 a.m. and died 30 minutes later.

Post-mortem Findings.—Examined the following forenoon, the carcase showed that our fluid administration had more than corrected any anhydraemia, as the tissues were all very oedematous and the organs very friable—almost mushy. The stomach contained about six litres of yellowish fluid and a few bots. The small intestine was greatly distended with about 30 litres of greenish-yellow fluid and large quantities of gas, whilst the pyloric end of the duodenum was blocked by an orange-sized mass of grassy material with some whole oats adhering to it. The caecum contained some six litres of viscous greenish material in the apex and some gas; the ventral colons were practically empty save for occasional lumps of typical dried blackish-green material adhering to the mucosa. The pelvic flexure was slightly and the left dorsal colon fairly firmly impacted with very dry material adherent to the mucosa, whilst the right dorsal contained a large mass of rather moist, greenish material of a putty-like consistency.

During 1947, only three cases of grass disease became available for study, and one of these proved unsuitable, being a young unbroken filly which was extremely difficult to handle. The results obtained with the other two are shown in Figs. 2 and 3.

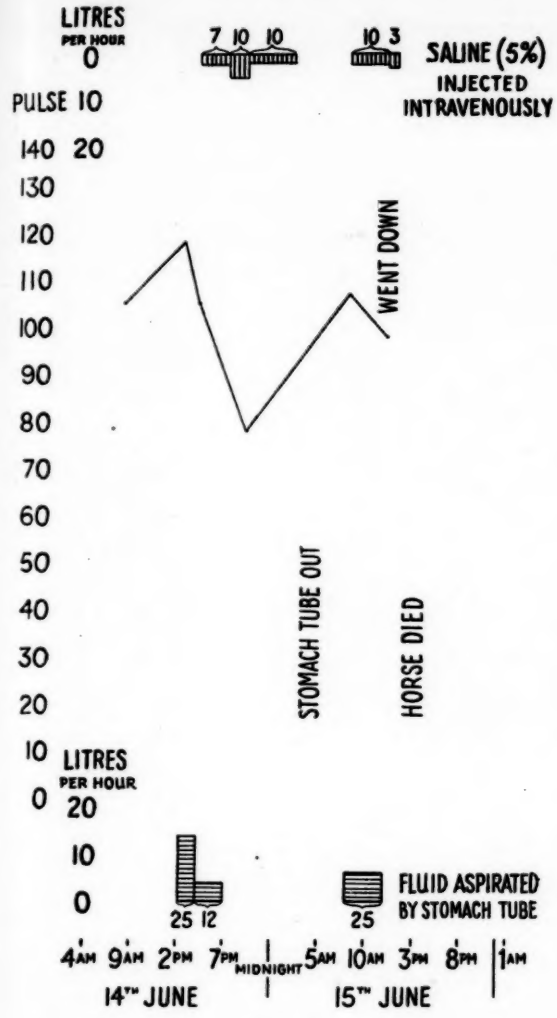

FIG. 2

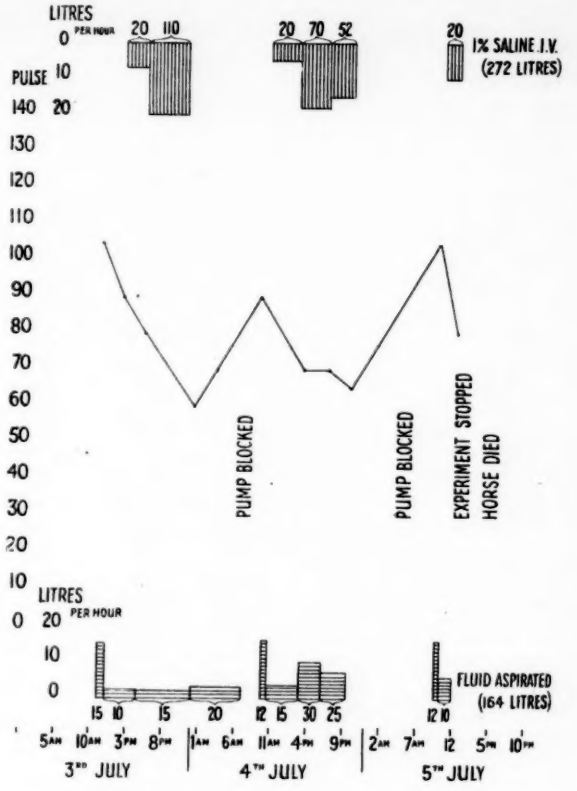

FIG. 3

CASE 2

The subject was a 15-year-old Clydesdale gelding. In this case, which arrived at the College with all the signs of acute grass disease within 24 hours of being noticed ill, we had considerable difficulty in removing any stomach contents owing to repeated blocking of the tube, and it was only by the constant pumping in of small quantities of fluid that we succeeded in washing material out. This, however, along with the continuous injection of small quantities of fluid, produced considerable relief; the temperature fell from 103° F. to normal, and the animal became brighter and eager to drink, though no water was given. Owing to the fact that the stomach tube came out during the night, by the next day the animal was much worse and died in the early afternoon, revealing on *post-mortem* examination a small intestine greatly distended with gas and watery fluid and in the large intestine the most extensive dehydration we had so far encountered.

CASE 3

A seven-year-old Clydesdale was noticed ill soon after stopping work on July 2nd. Seen by us next morning, it was acutely ill, but with intensive treatment it was greatly improved within 12 hours. In addition to the manipulative measures applied hitherto, large doses of prostigmin and eserine were given intravenously in the hope of stimulating bowel activity, but without result. Treatment of this animal had to be discontinued on the middle of the third day as the accommodation was required for other purposes. In our opinion, it could have been kept alive for some time longer if the experiment had been continued.

DISCUSSION

Though only a few cases have been dealt with, it is felt that enough evidence has been collected to justify the assertion that the majority of clinical signs in acute grass disease are secondary to distension, dehydration and electrolyte loss. Thus it has been possible in suitable cases to produce considerable improvement in the clinical condition by either gastric decompression or intravenous saline administration, whilst a combination of the two brought about a spectacular change. By such means one can turn a serious case of acute grass disease into an apparently almost normal horse in a relatively short time, except that bowel movement is not restored. With vigorous treatment the pulse can be brought from 110-130 per minute down to half that rate in 10 to 12 hours. At the same time the patchy sweating and muscular tremors disappear, the temperature if elevated returns to normal, and the animal becomes much brighter with normal appearance and appetite. An interesting feature was the return of the ability to swallow in those cases where it had previously been in abeyance, so that the horses not only became eager to drink but could do so even with a stomach tube *in situ*.

We were surprised also at the rapidity of return of all the clinical signs whenever treatment was discontinued, either accidentally or deliberately. Usually in a matter of 8 to 12 hours, the heart-rate had returned to its previous high level, or was even faster than before, whilst all the other clinical signs were in evidence once more. This was associated, of course, with the fact that the treatment made little or no impression on the intestinal impaction which was, presumably, an underlying cause of the trouble. It had been hoped that with liberal volumes of fluid administered intravenously, some would find its way into the dehydrated mass of material usually present in the large colon and that the gut might retain its capacity to deal with its contents in the normal manner. But this expectation was not realised even in Case 1, where so much fluid was administered by one route or another as to render the whole body oedematous on *post-mortem* examination. Administration of various intestinal stimulants also failed to produce any cathartic effect on the impacted mass in the colon even after animals had become normal to

outward appearance, though they did succeed in some cases in causing considerable discomfort.

It was not possible, owing to the anatomical arrangement in the horse, to pass the tube into the duodenum as is done in man, and to that extent decompression was never so complete as could be wished. Thus, in nearly every case at autopsy, though the stomach was practically empty the small intestine usually contained excessively large volumes of fluid. On the other hand, there was evidence that with the tube in the stomach some relief of intestinal distension might be brought about on occasion. Thus large ascarids were found occasionally in the aspirated fluid, some of them causing considerable trouble by blocking the apparatus. Moreover, in some cases the amounts of solid material removed were much greater than were likely to have been present in the stomach originally, suggesting that some had come from lower down the tract, possibly even from the large colon itself. Certainly the mass of grassy material found blocking the pylorus at the termination of Case 1 was identical with that in the left dorsal colon, whilst it is of interest to note that the more proximal parts, *viz.*, the ventral colons, were practically empty save for the usual blackish material adherent to the mucosa.

The results throw some light on the rate at which fluid can accumulate in the anterior portion of the alimentary canal of the horse. In Case 1, some 254 litres of secretion were removed during the experiment, *i.e.*, nearly 2½ litres per hour; in Case 3, rather more than 3 litres per hour. These figures are more or less confirmed by the amounts of fluid which collected in the intervals when suction was interrupted, which average out at 2 litres per hour in Case 1 and 3 litres per hour in Case 3.

It would appear from the above that in its response to gastric decompression and saline administration, acute grass disease in the horse behaves similarly to acute intestinal obstruction in man; and as mentioned in the introductory paragraph, the biochemical and pathological findings support this viewpoint. There is, however, in grass disease no obvious obstruction to the onward passage of fluid from the greatly distended stomach and intestine to the dehydrated and impacted colon mass. Such interference with function, therefore, as may be present is presumably neurogenic in nature, and it seems reasonable to suggest that acute grass disease has its closest analogy in the somewhat rare and little understood cases of neurogenic ileus in man; though why relatively large numbers of cases should occur in horses under certain fairly well defined circumstances remains for the present obscure.

Our findings offer no support for the suggestion that grass disease is caused by a neurotropic virus.[5] So far as we are aware, there is no known virus disease in which the clinical signs can be so readily alleviated by comparatively simple means. Moreover, our results indicate that the fundamental trouble is more or less localised to the gastro-intestinal region. This, taken in combination with known facts about the incidence of the disease—*viz.*, that the great majority of cases occur in horses at grass with the greatest incidence in May and June when grass is in the early stages of growth—suggests rather a local action of some toxic factor directly or indirectly associated with grazing. It does not, of course, explain the rather low and sporadic incidence of the disease, but that is a disability which is shared by every theory so far put forward.

Summary

1. Techniques have been devised for continuous gastric decompression and intravenous saline administration in the horse.

2. Applied in cases of acute grass disease, these treatments brought about spectacular though temporary improvements.

3. Administration of various intestinal stimulants produced no cathartic effect on the dry contents of the colon even after horses had become normal to outward appearance.

4. The significance of these findings is discussed.

Acknowledgments.—We have to acknowledge with gratitude the encouragement and support given by Principal W. M. Mitchell; also the help given by the Agricultural Research Council in providing a contingency grant to enable us to purchase suitable animals.

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Weekly Wisdom

Men will either be governed by God, or ruled by tyrants.—William Penn.

The Veterinary Press: Its Evolution and Present Trends *

I.—By J. T. Edwards †

Twenty-five years ago, on the occasion of his William Dick Oration, delivered at the Centenary Celebrations, Royal (Dick) Veterinary College, Edinburgh, on November 23rd, 1923, the late Sir John M'Fadyean made the following statement:—

"The indifference to the progress of veterinary science shown by successive governments in the United Kingdom is difficult to explain, but it is a curious fact that the other great Anglo-Saxon nation of the world was until lately equally neglectful.

"Someone has said that every nation has the government it deserves, and perhaps the same rule applies to the kind of veterinary profession found in different countries, but if it does, it has at least one exception, for the United Kingdom deserves a worse one than it possesses. Veterinary science unquestionably stands higher in the countries which early realised its importance to agriculture, and recognised that money given by the State to foster veterinary education would be repaid many times over. That is why France and Germany took the lead, and still hold it, in veterinary science, and especially in the literature of the subject. Fortunately, science has no territorial boundaries, and therefore this country has largely profited from the knowledge acquired abroad, but it is not worthy of a great nation that it should have to depend on the crumbs that fall from Continental tables."

That statement uttered 25 years ago can be taken as a convenient point wherefrom to begin a survey, backwards and forwards, of the evolution of the subject under treatment in this address. It is close enough for many of us still in active work to recall the circumstances prevailing at the time it was made. It is far enough away to make all of us realise at once that great history has meanwhile been enacted, for better or worse, in almost every department of life. Not least has there been wrought a great change in the matter of veterinary literature, so that it can be truly said that far from the two great English speaking nations depending "on the crumbs that fall from Continental tables" they are fully able now to partake of substantial fare at their own tables.

While in itself that is a consummation for which we may rejoice, there is in the situation as we perceive it at this moment so much that has the appearance of being transitional, if not ephemeral, that we may well speculate upon the further changes likely to occur in another 25 years, as well as contrive ways and means of giving proper direction to those changes. For, historically, a veterinary periodical literature is itself a wholly recent development, dating back only to the second quarter of the 19th century, when, somehow, and often after many difficulties, it came to birth and then obtained a foothold, precariously, to be sure, at the outset, in most countries in which there was for it, or rather, could be created for it, a reading public. It is therefore with something of surprise that one reflects that the changes wrought within the last 25 years, revolutionary as they have been, cover really an interval which extends beyond one-fifth and just below one-quarter, of the total span of existence of our veterinary periodical literature.

It would be well, therefore, to give close thought to the statement made by M'Fadyean in 1923, taking it, so to speak, as a text for the present address. In it, there are so many heads for discussion that when we have disposed of them I believe we shall have gained a fair insight into our theme. These heads may be displayed somewhat as follows:—

1. The situations in France and Germany on the one hand, and in the English-speaking countries, Britain and America, on the other, compared and contrasted in regard to (*a*) the attitude of governments towards veterinary development, (*b*) the mutual reaction of veterinary education and the veterinary periodical literature, and (*c*) the influence of veterinary associations.

2. The phases already evident in the evolution of the literature in all countries.

3. The roles of the veterinary periodical literature in (*a*) promoting the advancement of veterinary knowledge, and (*b*) strengthening the veterinary profession as a corporate body.

It will soon be discerned that under the first heading, there are marked contrasts within the two large groups of communities at the outset, with a tendency later towards the attainment of

* Papers presented at a meeting of the Association of Veterinary Teachers and Research Workers (Southern Region) at the Royal Veterinary College, on July 23rd, 1948.

† The substance of this paper was given at the meeting.

similarity; that under the second heading there are some fairly well defined phases, some of which are characterised by rise in influence to be succeeded by a fall, when a particular class of journal has outlived its usefulness, and becomes defunct unless it can readjust itself to changed circumstances; and, under the third heading, that periodical literature has played an immense part but only in such circumstances as when it is entrusted to enlightened control.

There is no lack of evidence upon which to draw. In the Jubilee Number of *The Veterinary Record*, published on July 16th, 1938, I computed there were then precisely 100 veterinary periodicals in circulation in the world, the oldest of which still in circulation being the *Recueil de Médecine Vétérinaire*, founded in 1824. The periodicals that had become defunct after varying periods of usefulness would amount probably to about five times that number. The periods of survival would vary, for example, from that of Bracy-Clark and Cherry's *The Hippiatrist* which was founded in 1828 and thundered itself out, having achieved its mission, in three years; to that of *The Veterinarian*, which was founded in the same year, had a glorious career under the brilliant editorship of William Percivall and William Youatt until 1854; and, in other hands, dragged on miserably to disappear unnoticed in 1902, after thus lasting altogether 75 years. Several parallel examples could be readily given. As illustrating the enormous growth in the periodical literature the following figures are quoted from the appendices to the *Report of the First Imperial Veterinary Conference*, August 15th to 18th, 1938. A list is there given of 539 journals from which references were taken in the year 1935 for the *Index Veterinarius*, references amounting in number to 150 and over being taken from eight publications; 100 to 150 from three; 50 to 100 from 24; 25 to 50 from 38; ten to 25 from 75; and under ten from 391. Only a minority of this large number of periodicals, however, could be classed as veterinary ones, but, all the same, the figures indicate the range of periodicals that must now be scrutinised to obtain some indication of the progress of knowledge upon matters of interest to the veterinarian; and, even so, upon only a limited aspect of his whole interest, namely that aspect which is concerned with what perhaps is most aptly termed preventive medicine and not the traditional one of ordinary professional practice, which still in this country is the aspect which comes to the mind of an ordinary member of the public as that of which he stands currently in need—"competent" veterinary attention.

Parenthetically, but perhaps not without appositeness to the theme under discussion, the present meeting is still well alive to the resentment deeply felt within the veterinary profession of this country at the decision of Government to apply the designation "veterinary practitioner" legally to the unqualified men whose names are to be brought in equity on to the Register of Veterinary Surgeons in fulfilling the recommendations made to it to suppress unqualified practice, and not the designation "animal practitioner." Yet, the organisation which came into existence in 1929 to perform the meritorious service of scrutinising the extensive literature dealing with the above preventive medicine aspect of our work is well known as the Commonwealth Bureau of Animal Health (not Commonwealth Veterinary Bureau) The Veterinary Department of the Ministry of Agriculture has changed its name to Animal Health Division; and the Veterinary Educational Trust to Animal Health Trust. And there was long-standing precedent, for the great organisation which was created in 1884 in U.S.A. to control epizootic disease and has since had so many achievements to its credit was christened at birth the Federal Bureau of Animal Industry. The origins of this enterprise can be traced to the public confidence reposed especially during the troubled times of the Civil War in Thayer (1815-89), who although himself one of the ablest veterinarians, never after appointment to the Massachusetts Cattle Commission in 1860 claimed to be a veterinarian. So rife was charlatanry in that country and so little faith did the public have in the whole class of men who arrogated to themselves the title "veterinary" that, to quote Merillat and Campbell (1935).* "a veterinarian in public or public life should function under a sobriquet." "Sensing this fact," they add, "through their knowledge of veterinary history, the veterinarians of the new Republic of Spain have adopted the name "animal engineer" for those who have qualified beyond the conventional requirement." The term "animal engineer" was seriously suggested, it seems, in 1900 by Dr. Leonard Pearson as a substitute for "veterinarian" at the 37th annual meeting of the A.V.M.A. in Detroit, and frequently used thereafter by W. Horace Hoskins. It would be in the light of these developments, no less at home than abroad, for consideration by those who have so devoutly championed an honoured word in the vocabulary of our own country whether, after all, without incurring risk of reproach for facetiousness in indicating to them the trends afield, a course of action eventuating in a contrary assignment of designations at this juncture would be politic.

I (*a*) *The situations in France and Germany on the one hand, and in the English-speaking countries on the other, compared and contrasted in regard to* (*a*) *the attitude of governments towards veterinary development.*

It has been a long-standing complaint that it is mainly because Government has stood aloof in this country from promoting veterinary education that veterinary literature, in output as well as in quality, has compared so very unfavourably with what was regularly forthcoming from the Continent. "In France and Germany," M'Fadyean said in the above address given in 1923, "the maintenance grants for a single year before the (1914-18) war exceeded the total amount given by successive Governments of this country for veterinary education during the last 120 years."

There has been, as we know, a transformation in this situation, and I have been at some pains to find out from close study of veterinary developments in the above countries, in particular from the prolific writings of Leclainche (France) and Schmaltz (Germany), whether that transformation in itself will ensure a corresponding transformation in the periodical literature. For, at this moment, that is perhaps the most important aspect of our present theme.

Certainly, at the Continental schools, and especially in Germany, there arose from the institution of veterinary education under the immediate patronage of enlightened rulers, such as Frederick the Great, and the King of Hanover, towards the close of the 18th century and throughout the 19th century, a whole constellation of brilliant teachers and writers the like of whom we did not have in this country. And for long years afterwards America (both the United States and Canada) depended mainly on immigration from the two British schools. Now, on reference to the facts as displayed by Merillat and Campbell in their book, it is evident that those arriving from the London School, under the régime of Coleman, were utterly worthless and contributed nothing, whereas from Dick's School in Edinburgh there arrived several men who made a lasting impression and bequeathed a remarkable progeny—such men, for example, as Andrew Smith who founded the most reputable school at Toronto, McEachran again at Montreal, and James Law in New York. Later there arrived Liautard, who had had his training in France.

It is not necessary to go over the ground again which was covered in the Jubilee Number of *The Veterinary Record* in 1938, mainly on evidence already examined by Sir Frederick Smith, to prove that it was not so much lack of State interest in veterinary development that proved the undoing of the profession. In the original programme of the Veterinary College in London, in which we can trace the hand of John Hunter, plans were laid down for the publication yearly of a volume of *Transactions*, which would in time have provided the materials for a sound indigenous veterinary literature. But it was not to be, because through the accident of the appointment in 1794 of a man to the charge of the school without vocational aptitude or literary talent, the very institution that ought to have provided a literature on the scale of the most favoured Continental schools not only produced nothing but for a whole century condoned ignorance. The financial help which Government gave direct and not on an ungenerous scale at the beginning was therefore discontinued in a few years, for there was little forthcoming to the general good from the institution.

Outside the schools, however, men appeared with remarkable gifts. During the very brief period of less than two years before Coleman was appointed, there turned out from the handful of about a dozen or so of students there at the time as many as three men who made afterwards abundant literary contributions, namely, Bracy Clark, Delabere Blaine and John Lawrence. Were it not that Coleman set at once to discourage that class of student from entering, who would inevitably soon outrival him, we can now discern no reason whatever why the English periodical veterinary literature should not from the outset have ranked among the best in the world.

Other men of brilliant gifts arose, but fate ordained that they should find no place within the intellectually impoverished and vocationally inept staffs of the Schools, more particularly the staff of the London School, the designs of its original founders, for reasons of covetousness and self-interest, having now been ruthlessly brushed away, William Youatt and William Percivall who launched *The Veterinarian* in 1828; John Gamgee who produced from 1858 to 1865 perhaps the most brilliant journal seen in England, *The Edinburgh Veterinary Review*, which anticipated the modern

* Merillat, L. A. & Campbell, D. M. (1935) *Veterinary Military History of the United States.* Vol. 1. p. 186.

measures for control of epizootic disease and meat inspection; George Fleming who founded *The Veterinary Journal* in 1875, which stirred the profession to action in obtaining legal recognition as a corporate body with the passing of The Veterinary Surgeons Act of 1881; and William Hunting, Gamgee's pupil, who founded *The Veterinary Record* in 1888. We cannot dismiss as men of mean talent Wallis Hoare and Henry Gray, who acted successively as editors of *The Veterinary News*, which competed as a weekly with the *Record*, probably to its real best advantage, from 1904 to 1921.

Within the schools, the name of M'Fadyean who founded *The Journal of Comparative Pathology and Therapeutics* in 1888, alone in its day placed this country on an international footing. Tribute must be paid to W. T. J. Morton who edited the *Proceedings of the London Veterinary Association*, 1841-44, which, too, bore the title *Veterinary Record* and *Transactions of the Veterinary Medical Association*, 1845-50. It was also a courageous enterprise on the part of the late Professor Bradley to bring out in four valuable volumes, from 1917 to 1920, *The Veterinary Review*, without financial backing and with only a few trained helpers, which was destined to fill a role similar to that of Leclainche's *Revue Générale de Médecine Vétérinaire*.

The Army during its short hey-day produced besides several moderate contributors the outstanding figure of Sir Frederick Smith. And the *Journal of the Royal Army Veterinary Corps*, founded in 1929, survives as a lively and useful quarterly production.

A section of the profession which has increased ever since the enactment of the Cattle Plague Measures in 1868 until it now represents a large whole-time service of Government has certainly produced no shining journalistic talent. Somehow, everywhere, wherever humanity is organised on a similar basis it becomes intellectually dead and so much subdued in spirit that any talent for sparkling journalism among its members is doomed to be extinguished before it becomes even mildly aflame.

In my contribution to the discussion at the last meeting of this Association I endeavoured to explain how it had been impossible in the constitutional history of this country to come to the aid of enterprises like veterinary progress until the mass of public opinion impressed upon the legislature the need for action. In the R.C.V.S. Centenary Number of *The Veterinary Record* it was shown how, in the meantime, enterprises of the kind had been nurtured by the free societies, of which the Odiham Agricultural Society, the Royal Agricultural Society of England and the Highland and Agricultural Society were striking examples of organisations which had fostered veterinary progress if not so much through financial aid, at least through their interest and patronage. In his message published in the same number, L. A. Merillat, the Editor of the *Journal of the American Veterinary Medical Association* faithfully summarises progress in America, and its genuine dependence on its British prototype or progenitor. "The A.V.M.A.," he says, "is not the all-powerful dictator of the veterinary service in the sense that the general commands his forces. On the contrary, its status is non-official. It governs by influence in spite of itself. The United States is perforce a society-governed democracy. . . . In that way, the voice and acts of the associations are those of government, in effect. . . . The A.V.M.A. is one of those organisations and it functions unopposed."

How near all that is now, with the growing experience of our own N.V.M.A. in devising ways and means of making its "voice and acts" "those of government," to the British experience need not be dilated upon.

For a full account of the evolution of present American literature, reference should be made to Merillat and Campbell's book, which clearly shows that it was not reluctance on the part of Congress to vote funds that prevented development but rather inexperience in the several States in the proper handling of the money and the moral and intellectual bankruptcy of most of those who at the outset were within call and bore the title veterinarian. Anyhow, it can be inferred that however s'ow and sordid were affairs at the beginning within that system, it has conduced to the largest and finest organisation in the world for the exercise of the talents of a modern veterinarian and a literature culminating with the appearance in 1940 of the *American Journal of Veterinary Research* which also ranks now as among the richest in the world.

I may quote the following examples of how differently things began on the Continent:—

(i) It was the lawyer and horse-lover Bourgelat, who through his personal influence with Bertin, the Finance Minister to Louis XV, obtained the Decree in 1761 which authorised him to open a veterinary school at Lyons, the first modern veterinary school in the world and the forerunner of the many that soon followed in other states. The veterinary historian inclines now to believe this may have been a bad beginning, because already a thoroughly experienced man, of more suitable personality—somewhat comparable to William Dick later, in 1823, at Edinburgh, but of far greater erudition—namely Etienne Lafosse, who was contributing most handsomely to the clinical literature, was in process of launching the enterprise if it had not been that he was outrivalled in Court patronage.

(ii) It was Frederick the Great himself who after witnessing the misery suffered by his peasantry from the ravages of cattle plague ordered plans in 1767 for the opening of a veterinary school in Berlin specially for the teaching of cattle diseases.

(iii) It was the King of England, who was also Elector of Hanover, who summoned the remarkable practitioner Kersting to open a veterinary school, particularly for horses, at Hanover in 1778. It has often been commented upon that in England, where the needs had been equally dire, the notion to open a veterinary school occurred to a Society (the Odiham Society) and not to this same monarch.

(iv) The towering intellect of Goethe (Napoleon: "I have beheld a man") (himself an aristocrat, of the powerful German ruling class), brought into existence a veterinary academy at Jena in 1817, which, he declared, aroused hostility among the people in the neighbourhood belonging to the "lowest and lower-middle classes."

In England and America, therefore, it is not the edicts of monarchs and powerful ruling classes that promote developments which culminate eventually, among many other things, in a healthy "veterinary press," but largely the uplifting into a sense of the fitness of things of Goethe's dejected "lowest and lower-middle classes."

1 (*b*) *The situation in France and Germany on the one hand, and in the English-speaking countries, on the other, in regard to the reciprocal reaction of veterinary education and the veterinary periodical literature.*

As evidence that the periodical literature is a development arising out of systematic education and appearing after a period of lag, it has been pointed out that the first journal published in France, the *Recueil de Médecine Vétérinaire*, was brought out in 1824, namely just over 60 years after the opening of the schools.

That this does not hold generally true is evident from the British experience. The first viable journal certainly came out in 1828, namely 37 years after the opening of the London Veterinary College, but neither it nor its ephemeral contemporary, *The Hippiatrist*, were launched because of any debt they owed to that college, but to attack the abuses which had arisen in it which were conducive to faulty education. Time will not allow me to dwell upon the heavy debt which American veterinary education as at present organised owes to the prior activities of the veterinary press and the great Association which controls part of that press as its official organ.

It is true that both in Germany and in France almost the entire press is run by members of the teaching staffs at the schools. In this way, the standards of the texts received for publication appeared for long to be generally much higher than those of our own press. But, as Leclainche pointed out forcibly in the valedictory article which he published in the *Revue Générale de Médecine Vétérinaire* in 1936, namely in the last issue after 33 years of publication, this is a great weakness as well as a strength of the Continental journals. The four great German weeklies of that time had impressive circulations, but there was little evidence that they were closely read or reached the minds, leave alone the hearts, of the majority of subscribers. As he stressed, journals of this kind were edited "by readers and not *for* them." There was little in them to inspire the ordinary contributor, to compel his interest or extend his reading. There is little in them to prove that they really interpret the life of the profession of their country as a body of men with common interests, desires, and grievances. And, their language seems certainly above the heads of men such as have to work professionally in close daily contact with masses of the public who care little for "fine words" and hence have to attune their own habits of everyday speech accordingly.

1 (*c*) *The situations in France and Germany on the one hand, and in the English-speaking countries on the other, compared and contrasted in regard to the influence of veterinary associations.*

It is here, of course, that England, with her "Mother of Parliaments" has led the world, and as a distinguished French colleague said in his message for the R.C.V.S. Centenary Number of *The Veterinary Record*, the 1844 Charter of the R.C.V.S. is the Magna Carta of all professional organisations. Time will not allow again to discourse upon the all-important part which local societies have played in contributing through their discussions to our periodical literature, but, at their best, they have made it alive and vocational in its setting in a way that is the envy even

of the sister English-speaking community. Paradoxically, the prime movers, of whom there have always been ample, in promoting society organisations in England had as their pioneer a fine practitioner, of Ashton-under-Lyme, of German descent, Thomas Mayer, who founded the oldest society, the Veterinary Medical Society of the College in which we meet to-day, in 1813, and whose son, Thomas Walton Mayer, embodied in himself the Messianic spirit to urge the profession to action at last to obtain its original Charter of 1844. Certainly, in France, the Société Centrale de Médecine Vétérinaire has provided a distinguished forum for discussion of papers for over a century, but nothing exists in France which is capable of voicing effectively the aspirations of the profession as a corporate body in the manner of the English-speaking countries. The German Veterinary Association, founded as late as 1874, at its annual conferences has certainly discussed matters of great moment but its strength as a civic institution hardly seems to compare with that of our own N.V.M.A., and unlike it and the A.V.M.A. it has never been able to issue an official organ of its own but records its transactions, somewhat lifelessly, in the great school journals. In that important respect, the veterinary press of the two groups of countries differs conspicuously, and though in the first the press was quicker to assert itself as a potent instrument for disseminating knowledge, it is in the second that the gathering strength of a sound civic system becomes apparent in ultimately attaining great enterprise.

2. *The phases already evident in the evolution of the periodical literature in all countries.*

These phases are best illustrated if we take especial notice of the evolution of the German literature, which at nearly all dates has been supreme, until perhaps recently, in both quantity and quality. It had rather difficult beginnings, but as it was in the years immediately before this last war, its history as delineated by Leclainche would be summarised somewhat as follows:—

(i) The *Sammlung* of Knobloch, 1785, and the *Archiv für Rossarzte* of Busch and Damm, 1789, comprising merely incidental records disappeared after a few years, while the *Magazin* of Rohlwes, 1789, and that of Teuffel, 1811, the *Zeitung* of von Tennecker and Valentini, 1814, and the *Monatsschrift der Rindviehkunde* of Michel and Ithen, 1821, which followed had also only an ephemeral existence. As yet, there was no clear-cut distinction drawn by the press between the lay reader and the educated professional man, and a literature striving to appeal to both, as shown by much experience elsewhere (as, for example, in the case the London Veterinary Association breaking away from Youatt for that reason) was foredoomed to perish. And so, at the next stage, a new type of periodical literature, of confined but general appeal to a rising profession, with its interests still undifferentiated, emerges.

(ii) The *Zeitschrift für die gesammte Tierheilkunde und Viehzucht*, of Nobel, Vix, and Dieterichs, 1834, represents the first durable publication, lasting till 1850, after calling into existence two emulators, namely (*a*) the *Magazin für die gesammte Tierheilkunde*, of the great Berlin teachers, Gurlt and Hertwig, 1835, which remained until 1874, the principal German publication and contained a great variety of original records which exercised a profound effect in remodelling later—mainly through text-books cast around them, like that of Friedberger and Frohner—the whole practical veterinary teaching in all veterinary schools in the world; and (*b*) the *Repertorium der Tierheilkunde* of the great Stuttgart teacher, Hering, 1839, became similarly the organ of South Germany veterinarians, and pursued an honoured career until 1893. Meanwhile, two journals had come into existence (the *Tierärztliche Zeitung* of Fuchs, 1844-1849 and the *Zeitschrift für Rindviehkunde* of Rychner, 1844.

(iii) The year 1875 marks the beginning of a new period, namely, that of differentiation and specialisation. Of those circulating already, namely the *Repertorium* of Hering, the *Tierarzt* of Anacker, 1862-1892, and the *Wochenschrift für Tierheilkunde* of Adam, 1857-1889, lingered, and new species of journals sprang up to replace them, such as we knew before this last war, namely (*a*) the weekly journals, destined mainly for practitioners, containing original articles, reviews and abstracts, and news; (*b*) journals published at much longer intervals devoted solely to carefully edited scientific articles, and (*c*) publications devoted to some speciality, such as meat and milk hygiene, army affairs, horse shoeing, breeding problems, the fur-bearing animals, etc. The four great weeklies circulating before the last war comprised: the *Berliner tierärztliche Wochenschrift*, appearing under the names of Dieckerhoff and Lothes in 1889 and which under the editorship of Schmaltz has played a leading part in upholding the profession in Germany; the *Münchener tierärztliche Wochenschrift* published by Professor Ernst since 1909, and now amalgamated with the *Berliner* and run jointly by the staffs of the Berlin and Munich schools; the *Tierärztliche Rundschau* founded by Professor Hinz in 1894 which became changed in format in 1920 to the very complete and widely read practitioners' journal still in circulation; and the *Deutsche tierärztliche Wochenschrift* founded at Hanover, in 1892, under the internationally famous names of Lydtin, Damman, and Schütz, which like the Berlin weekly is both scientific and practical. This completes an array of veterinary weeklies such as is not remotely approached by any other country. Why that should be so is to be discerned in large part in the general avidity of the available public for reading, which was determined much earlier in Germany through the insistence of great rulers, such as those already mentioned, upon the prior claims, in spite of all other calls, of education upon the national finances.

The oldest of the purely scientific journals was the *Zeitschrift für Tiermedizin und vergleichende Pathologie*, founded by Frank and Bollinger at Munich in 1875, and the *Archiv für wissenschaftliche und praktische Tierheilkunde*, founded in the same year by Gerlach, of great renown, and still published up to the war, under the editorship of Neuman-Kleinpaul. The *Monatshefte für praktische Tierheilkunde* of Fröhner and Kitt contained very important original articles from 1895 to 1917. The *Zeitschrift für InfektionsKrankheiten, parasitäre Krankheiten und Hygiene der Haustiere* founded in Berlin by Ostertag, Joest and Wolfhügel in 1905, continued to appear under the direction of von Ostertag and likewise inserted original scientific and practical articles.

The third class, namely the specialist publications, comprised the *Zeitschrift für Fleischbeschau und Fleisch-producktion*, which became the *Archiv für Nahrungsmittelkunde* of Schmidt-Mulheim, published from 1885 to 1890; the *Zeitschrift für Fleisch- und Milchhygiene* founded in 1891 by Ostertag and published twice monthly since then. Since 1901, a bi-monthly, the *Deutsche Schlachthofzeitung*, devoted to the organisation of cattle markets and the butchery trade, appeared under the direction of Müller, Heiss and Kammel. The *Zeitschrift für Veterinärkunde und Veterinärdienst*, edited by Professor Lührs, was directed to army veterinary matters. The *Hufschmied* founded by Lungwitz in 1883 was directed to horse shoeing and farriery, the *Zeitschrift für Pelztierkunde* to the fur-bearing animals, and finally the *Deutsche*, a publication with a large circulation, became, after 1934, the organ of the *Reichsverband* of German veterinarians.

In comparison with the above, the eminent French journals have remained strangely static, and although they have kept in circulation for so long it is probably the backing of the schools supporting them rather than their appeal that accounts for this survival.

On the other hand, although it has been on a small scale and on the whole of decidedly poorer quality, the British veterinary press at any rate has demonstrated vigour by conforming to a somewhat similar evolution. There are also signs of an entirely similar transformation in the American press, though there, as to a slight extent in this country, the backing of publishing firms deriving a revenue from advertisements has contrived to keep a few journals in large circulation that are not of the highest merit.

Difficulties arising through language interfere enormously with the diffusion of the periodical information. Thus in countries like Hungary, Roumania, Portugal and Argentina, whether through ready government patronage and able men in the profession, the journalism when examined is relatively of surprisingly high standard, but the readers outside their own national boundaries must be very few. One of the very best journals, for example, in Europe before the Civil War in Spain, was the monthly *Revista de higiene y sanidad pecuarias*. On the other hand, in Holland, Denmark, Switzerland and Sweden, where first class journals have long been in circulation, there does not seem to have been very much difficulty because authors have usually contrived to communicate their main findings in the chief European languages. Nevertheless, there may be a costly lag. Merillat and Campbell, for example, state that it was only after about ten years that the milk fever treatment devised by Schmidt, of Kolding, Denmark, became generally known to American veterinarians. Leclainche believes that something on the lines of what has emerged in the Balkan countries with the appearance of the *Revue Vétérinaire slave*, in which summaries of all papers were given in German, French, or English, might well be attempted on a larger scale. Unfortunately, that journal, through recent world disturbances, was destined to flourish only for a short time. That valuable journal, the *Journal of the Japanese Veterinary Society*, has, indeed, provided such summaries since its inception and thus made known important researches, such as those of Kakizaki and his school upon cattle plague immunisation, quickly to the world. The services which the Commonwealth Bureau of Animal Health are furnishing in this respect are truly invaluable.

Before a meeting such as this, namely of Veterinary Teachers

and Research Workers, I make no apology for what may have seemed a tedious recital of foreign names. M'Fadyean, as a teacher and as a research worker in this country, towered so much above his contemporaries that they dwarfed into the stature of pygmies. It was his good fortune that he blossomed into his career at the very outset of the third great phase mentioned above. Immediately after qualifying in 1876, it is to his credit that he strove by every means at his command not to miss any of the treasures poured out in such rich abundance during what Leclainche has called "the golden age" of veterinary progress. His chief means was to gain a mastery over the veterinary press of the Continent. Others had done or were doing it to some extent—men like Hayes, Fleming and Dollar, who translated some of the important text-books built up around the new literature, and those books soon supplanted the very poor matter previously available. But M'Fadyean was fully abreast of the original press literature, and he contrived to hand over its main content fully digested to his students, to practitioners who sought his advice and to agriculturists. Others on the staffs of the colleges could have done so equally readily in all the other branches in which they were professing competence. It may not be entirely out of place as a reminiscence if I repeat a short conversation between us (in 1926) shortly after he had entertained as his guest an American veterinarian whose name in print was well known to me. Appreciating the transforming situation, I said: "Sir, is it not wonderful how America is turning out now such a large number of good men?" "H'm, yes," he retorted, "a large number of good *second-class* men." Recollections of what in his estimate were "good men" must have been of an array such as those listed above who transformed the whole outlook of veterinary practice and science by creating a sound press.

One cannot but recall the remark of Bernard Shaw on hearing that the late William Temple had been appointed Archbishop of Canterbury: "For a man of my generation an archbishop of Temple's enlightenment was a realised impossibility." Likewise, in the history of the British veterinary colleges, it must have been that at last to see a man of M'Fadyean's enlightenment appointed as Principal in 1892 was a "realised impossibility."

3 (*a*). *The role of the veterinary periodical literature in promoting the advancement of veterinary knowledge.*

In a speech delivered by M'Fadyean in 1905 he assured his listeners that the only way to advance the veterinary profession in the esteem of the public was to strive to advance the sum of veterinary knowledge. Again things have changed. Since the first world war, governments everywhere have come to realise that the only safe way of preserving their existence in rivalry with other nations is to expend money on all departments that will contribute something to meet emergency, and the health and well-being of the people in the matter of its food is one of these. So there is no dearth of competent, if not always highly inspired, information pouring out as the outcome of increased research. Concern has been felt about the huge volume that comes out for recording and how to preserve the essential elements in it for the perusal of other workers without suppressing it. There can be no question about one aspect of it, and that is that most of it is of little interest to the ordinary professional reader and the encumbering with it of the journals whose avowed object is to enlighten the mass of the professional public merely creates in them a distaste for reading. Everywhere, new societies are coming into existence whose members specialise in some branch in which they have a common language but which is not often intelligible or interesting to the practitioner. Most of these societies have founded their own journals or have taken over some journal already in existence to their special purpose. It has been well said that the main hope of advancement by the veterinary profession is to interest themselves actively in as many as they can of these societies, so that all round the profession reaps advantage from its members meeting on common ground with outside workers. It is not within the means, however, of the great mass of busy practitioners to partake of such discussions. Confronted as he is with the numerous and varied problems of everyday practice, the practitioner's work in benefiting the public from new knowledge is just as important as that of the specialised research worker. He needs, however, to have that knowledge already digested for him. Whatever the research worker has therefore not yet fully digested and confirmed for use by the practitioner ought first to be published, and so exposed to the necessary criticism by colleagues, in carefully edited periodicals of the kind already mentioned in preceding sections. With the prevalence of abstracting journals, the author need have no fear that his facts will not soon be before the notice of his few really interested scientific colleagues. Great harm may otherwise be done by packing the professional journals with abstruse information. As we have seen, there is now in almost all countries, starting with the long-standing example of Germany, a move to produce a cleavage between the journals devoted to scientific articles and those more concerned with espousing the professional cause by concerted action. Something along these lines was attempted as far back as 1903 by Leclainche when he founded the *Revue Générale de Médecine Vétérinaire*. There were great difficulties at that time. The chief was that suitable men competent to produce reviews on every given topic, clinical or scientific, that would appeal to the practitioner were not available. Again, with advancing age, a journal founded by an individual, however dazzling as an editor at the beginning, tends to "date" with its editor. Hence, although the history of our journalism proves—as in the case of Bouley with the *Recueil*, Youatt with *The Veterinarian*, Hunting with the *Record*—that it is the editor's own personality that cultivates its appeal, a virtue that can never be exhibited by a committee—yet the only safe course to ensure continuity is to have it sponsored by a society.

3 (*b*). *The role of the veterinary periodical literature in strengthening the veterinary profession as a corporate body.*

Most of what can be done in this way has been already suggested, and reference may be made to the Jubilee Number of *The Veterinary Record*, 1938, for references to authority on this subject. I do not think that the role of a professional journal ever has been so well expressed as it was by William Hunting in an editorial article in 1890. "From the very nature of our Journal," he said, "existing as it does, only for a corporate profession of small numbers—of an art built up on several sciences, it is evident that our literary support must come from members of our body if it is to be really representative: for although it may be possible to find other fluent writers on suitable subjects, it is more than doubtful if their writings would be as acceptable to our readers as the words of those who are in our ranks—who are sharing our burdens and rejoicing in our successes. We do not want the *Record* to be a one-man organ, we want all the diversity of views obtainable from different men in different places. . . . We do not wish to drift merely into an organ of veterinary politics. Our desire is to record the progress of the profession and assist in its advance. To supply a medium in which practitioners can exchange ideas on all topics: in which they report cases; discuss the nature, treatment and prevention of disease: point out the dangers and difficulties which menace our body corporate, and offer suggestions for our good. . . . Our professional interests are greater than those of any individual, and we shall never hesitate to use, or allow others to use, our pages for pointing out abuses or correcting errors. . . ."

In his great historical work, listing the journals of each country at the close of his description of veterinary affairs in that country, Professor Leclainche in 1936, with all his great authority, pauses after listing *The Veterinary Record* to describe it as being "*one of the most lively and most interesting journals of the age.*"

William Hunting made no secret of how that was to be achieved.

II.—By R. E. GLOVER

In comparing the veterinary press of the present day with that of 75 years ago and earlier, it must be obvious to the most casual observer that significant changes have taken place. During that period most articles in veterinary periodicals were of a clinical nature or were concerned with studies of those basic sciences such as chemistry, anatomy, physiology, etc., which had a direct bearing on the clinical application of the veterinary art. It is true that important contributions had been made by the morbid histologist, and pathology was already an established science, but bacteriology, biochemistry, genetics and so on were practically uncharted seas. In general, veterinary literature covered a relatively narrow field and the assiduous reader would not find the whole range of scientific knowledge beyond his compass. Both time and space could be found for lengthy articles and many of the writers of the period, as a result of a sound classical training, showed a striking command of the English lanuage and a graceful style of expression which is often sadly lacking at the present time.

The inception of the Pasteurian era and the impact of ever-widening fields of scientific endeavour have resulted in a steady increase in the annual output of fundamental and applied scientific and clinical papers. In spite of the unremitting appearance of new journals, pressure on space becomes more acute and writers have been forced to adopt a more succinct form of expression. In addition, articles written by members of the profession engaged in a variety of ancillary subjects are no longer confined to veterinary periodicals, but inevitably tend to gravitate to journals which are concerned with the branch in which the worker is particularly interested. It is not surprising, therefore, that the modern student, if he wishes to keep abreast of the literature relating merely to those sciences in which he is pre-eminently

interested, shows a disinclination to struggle through lengthy articles and welcomes the author who is capable of marshalling his facts within a reasonable compass.

It is pertinent to enquire whether existing periodicals provide an adequate outlet for veterinary teachers and research workers. In 1939 there were about 90 well-known journals devoted to veterinary science. The majority published original articles and possibly a small number of abstracts but a few were restricted to abstracts and reviews. Great Britain was responsible for six journals (two abstracting publications), or about 7 per cent., which would seem to represent a reasonable proportion of the total. Up to 1939 the output from German sources was most comprehensive and probably exceeded that of any other country.

During the war it was extremely difficult to keep track of developments in the European and Asiatic zones although certain publications such as the *Bulletin of War Medicine* made a valiant and not unsuccessful effort to enable workers to keep abreast of the enemy's published work. The present widespread disruption in the political and economic life of many European countries has seriously hampered a return to normal conditions and the position is still obscure. Many journals are not reaching this country; some have probably ceased publication. It is hoped that international organisations such as the International Veterinary Congress will take an active part in promoting the freedom of channels of exchange between different countries.

In Great Britain the veterinary periodicals cover a wide field and cater for every branch of veterinary science. There is now a fairly sharp division between the journals which deal, at any rate in part, with political subjects and those which confine their pages to original work. Undoubtedly there is a place for each type and this dichotomy is, I think, a feature of the modern press which is to be encouraged. *The Veterinary Record* which since 1920 has been the official journal of the N.V.M.A. has played an important part in reflecting—and perhaps moulding—the views of the profession on current affairs. A valuable feature of the *Record* is the Correspondence Column which allows the individual to comment freely on current topics and may permit the leaders of the profession to gauge the temper of the rank and file. A possible weakness of our press is the lack of a clinical journal which owes no allegiance to an official body, and would thus be in a position to provide independent comments on current affairs and official policies. In medical circles the *Lancet* performs a most useful service since it does not invariably follow or approve the tenets of the British Medical Association as expressed in the *B.M.J.* This independent outlook has rendered substantial services to the medical profession.

During the past 25 years there has been a striking increase in the number of original papers submitted for publication and some may doubt whether, in spite of the creation of many new journals, there is adequate provision to cater for the present day output. Lack of paper, which compels established journals to restrict the length of communications and occasions irritating delays before papers are published, is largely responsible for the dearth of space, but I think this is a temporary phase in our journalistic experience and once it is overcome, authors will find that they will have no difficulty in placing their contributions.

I have already remarked on the changes which have taken place in the structure of original articles, which have become more succinct and more objective. A transition of a similar nature has also occurred with the abstracting journals. Seventy years ago access to well-stocked libraries was more difficult than at the present time, whilst complete collections of foreign journals were exceptional. Advances in knowledge were being made with surprising rapidity and students were anxious to follow all important developments. The abstract journals of the time, of which the *Bulletin Institute Pasteur* is an outstanding example, provided lengthy summaries of original articles, thus presenting the reader who could not consult the original with full details of any fresh discoveries. Some of the abstracts in the early numbers of the *Journal of Comparative Pathology* are in themselves miniature articles in which references are made to all the salient points developed in the original contribution. This need for extended abstracts was of still greater importance to Colonial workers who were often cut off from contact with current literature. Their requirements were covered by periodicals of the type of the *Tropical Veterinary Bulletin* which under the able editorship of A. L. Sheather and J. T. Edwards provided overseas readers with full accounts of current advances and thus gave them access to invaluable material without the need to refer to the original text.

The extended abstract is, however, falling into disuse and rightly so. The field to be covered is so vast that it is impossible to do more than indicate in general outline the scope of articles. I feel that the average reader requires an abstract journal, partly to enable him to secure a general picture of current research and partly to decide whether a particular contribution is of sufficient interest to warrant its perusal in the original. Abstracts should be rather more than extended titles which are rarely of great value to the reader but should not be overwhelmed with detail. They should be strictly objective and should contain no expression of opinion of the abstractor. It is doubtful whether the practice of some journals of permitting abstractors to comment on the work of authors is wise: in any case the abstractor should not judge the manner in which experiments have been planned or executed or the author's interpretation of his findings. The reader has a right to expect a purely factual précis. The place for the critical assessment of articles is the annotation or review in which an attempt is made to indicate how knowledge has been confirmed, extended or refuted by current investigation.

The chief danger at the moment lies in the overlapping which tends to occur amongst abstract journals dealing with collateral subjects. Whilst it may be evident, for example, that in the treatment of an article on the effect of nutrition on disease, the abstractor for a nutritional journal may bring out points which may not be considered of equal importance by the person dealing with the disease aspect, unnecessary duplication does arise and a closer integration of abstract journals might be advantageous. The Commonwealth Agricultural Bureaux through their periodicals are covering a wide field and are performing a most valuable service, but with the advent of new abstract journals, such as *Excerpta Medica, Biological Abstracts* and so on, it would seem that a case can be made for discussion at an international level to ensure the avoidance of redundances.

Reviews.—A pertinent question is the extent to which ordinary journals should devote space to annotations and reviews. In my opinion, such journals if they are primarily catering for research workers, should not normally be used for extensive reviews of the literature since they can be employed to better advantage in recording original research. *The Veterinary Record* performs a valuable service by presenting annotations on topical subjects which enable the practitioner to refresh his memory and to become acquainted with new advances. The value of the *Record* would be greatly increased if the number of annotations could be multiplied, but the preparation of reviews, if they are to be sufficiently comprehensive and informative, requires much diligent research. This is a field which might well be brought to the notice of the younger graduates. By collating current literature, they would be rendering a signal service to the profession whilst the necessity to scrutinise the journals with care can never be without profit to the individual.

Some of the abstract journals make themselves responsible for reviews: this function may properly be regarded as falling within their sphere. A few journals, such as *Nutrition Reviews, Revue d'Immunologie*, are now being published which are solely concerned with critical reviews. If the articles are truly objective and scrupulously fair to authors, who have no means of refuting misrepresentation of their views, they perform a valuable service. They may be the means of conserving valuable space in other journals if authors who are preparing manuscript for publication will consider the extent to which previous investigations have been reviewed in such annotations and, by referring the reader to them, avoid unnecessary repetition. In this way more room can be found for recording personal work.

Long term investigations, the result of which cannot always be published until the enquiry has terminated, are often difficult to condense. The subject matter may be so voluminous that it is unsuitable for the ordinary journal. In these cases, Government or Institutional Reports such as the Special Series published by the Medical Research Council, Monographs from the Rockefeller Institute and so on are particularly valuable. In these compendia the data can be presented in great detail and with full protocols. It must be remembered, however, that the circulation of such monographs is more restricted than that of journals and the investigations may therefore fail to receive the same degree of publicity that they would if they appeared in a journal of repute.

Functions of Editors.—The control which editors of journals should exercise over manuscripts which are received for publication is often misunderstood. An editor has responsibilities to the author, to the reader and to the journal itself. It must not be forgotten that, in the eyes of the world, the prestige of the veterinary profession is largely determined by the quality of its literature and editors by maintaining a high standard can exert a potent influence. Great care and restraint should be employed by editors in the performance of their functions. There are bound to be differences in the methods of presentation adopted by individual authors, but provided the articles conform to the general pattern prescribed by the journal, authors should be allowed a reasonable freedom of style and expression. It is, however, the duty of editors to draw attention to certain faults of which,

apart from obvious errors in spelling, grammar and so on, the following are probably the most common.

(*a*) *Excessive References to the Literature.*—It can now be accepted that, apart from exceptional circumstances, the main advances in any subject are well known. Authors should be careful to restrict their reviews of the literature to the briefest summary of those aspects which have a direct bearing on current research. Such reviews may take the form of an introductory paragraph or they may be relegated to the discussion. As far as possible repeated references to the same author should be avoided since not only may the reader be confused but it is difficult to escape reiteration of the same facts.

In connection with references, the work of editors is made onerous if authors do not check citations with care. Dates quoted in the text may not correspond with those given in the bibliography, names are incorrectly spelt and the particular format adopted by the journal in respect of references, tables, etc., is not always followed.

(*b*) *The Proper Use of a Discussion.*—The discussion is intended to draw attention to the manner in which the authors' findings confirm, supplement or refute former investigations. The theoretical and practical implications of the work are proper topics for a discussion and the possible connection with future advances in knowledge can be developed. The discussion should not re-affirm in a different form the main contentions since these should be clearly manifest to the reader in the section dealing with results and should be succinctly summarised in the conclusions.

(c) *Use of Tables.*—An author may prefer to condense his data and present them in the form of tables or charts: or he may choose a more lengthy explanation in the text. Bearing in mind that tables are more difficult to set and add to the cost of production, either method is acceptable. I would stress, however, that it is usually unnecessary to adopt both methods since the clarity of articles is not thereby improved and space is taken up unnecessarily.

Finally, I would like to draw attention to the guidance which teachers and senior research workers can give to the young graduate. During his student days, it is inevitable that the undergraduate is taught to rely very largely on statements made by his teachers and in text-books and he tends to assume that what he reads is immutable. Later, he should be encouraged to examine a series of original papers dealing with one particular subject and to analyse the findings of the authors, probing for weakness in argument, learning to recognise the treatise which makes a real contribution to scientific progress and studying the way in which papers are compiled so that he will come to realise that they should conform to certain rules.

As I have already mentioned, many papers, through inexperience or lack of supervision, are badly presented. In addition to inaccurate references they are not always divided into logical sections, suitable subheadings are not inserted, matter reported in the text does not conform with tables and so on. But overshadowing all these faults is the inability of many modern writers to cut out redundant matter, sentences and words. The conscientious and well-trained writer will attend to these details and if in doubt will be well advised to obtain the help of a senior worker before submitting his manuscript for publication.

(*Continued from col.* 1, *page* 505)

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ANNOTATION

Grass Sickness in Horses

This disease is reputed to have made its first appearance in this country in Forfarshire about 1909 and although a few cases may have occurred prior to that time it is very improbable that such cases were at all numerous and it can be said that this disease, at least in its post-1909 incidence, is a new phenomenon in veterinary medicine. Since 1909 the areas affected have increased in number and extended so that cases have occurred as far north as the Orkney Islands and as far south as Kent and Cornwall. The distribution, however, is by no means uniform. The areas which have suffered most severely are the north-east, south-east and south-west of Scotland, some of the northern counties of England, parts of West Shropshire, Anglesey, South-West Wales and to a less extent the eastern counties of England. The areas which have suffered least have been north-west and central Scotland, Durham coalfield, parts of the West Riding of Yorkshire, parts of Lancashire and Cheshire, and the Midlands and south of England, North Wales and Glamorgan and Monmouth. There is evidence that new areas continue to make their appearance in this country. Recently the disease has appeared in Northern Ireland and it has been reported in low incidence from Brittany and Flanders and parts of Scandinavia.

The disease is confined to the Equidae and cases have occurred in most if not all breeds of horses in this country. Animals of both sexes may be affected. All ages may be affected but cases in foals and yearlings are definitely few and horses over about seven years of age seem to be less liable than horses of ages three to six years though a number of horses even over 20 years of age have been known to die of this condition.

The disease affects, with few exceptions, the animal grazing either full time or part time. Most cases occur in the months of May, June and July, but cases have been reported as occurring in every month of the year.

Symptoms.—The cardinal symptoms are those of dysfunction of the gastro-intestinal tract. In acute cases some difficulty in swallowing usually occurs. Complete or almost complete bowel stasis is present and auscultation of the abdomen reveals the absence of peristaltic sounds; no medicinal treatment capable of restoring normal bowel movement is yet known. Occasionally purgatives given early in the course of the disease produce some purgation but stasis supervenes. On rectal examination of acute cases the rectum is found to be empty except for the presence of a few hard pellets; the contents of the colon are felt to be hard; the arm on withdrawal is seen to be smeared with sticky mucus. Such animals die in about 24 hours to five days. Symptoms of colic vary in their intensity. It is rare to find cases showing the acute colic such as one associates with bowel torsion and some acute cases do not show symptoms of much abdominal pain, which is remarkable in view of the gross distension of the stomach and small intestine which is found on *post-mortem* examination in such cases.

In subacute cases some peristalsis occurs and small quantities of very hard dry faeces may be passed. A few subacute cases on the other hand pass abnormally soft cow-dung-like faeces. Difficulty in swallowing, marked tucking up of the abdomen, muscular tremors of shoulder and quarter, and sweating under the tail are prominent symptoms in subacute cases. Such cases generally survive for about two to four weeks: a few go on to make an apparent recovery though quite often the animal is not fit for hard work.

Post-mortem Findings.—On *post-mortem* examination the acute cases show gross distension of the stomach and small intestine, mainly with fluid contents. The contents of the large colon, on the other hand, are abnormally dry and usually covered with a blackish coating. The colon contents are not necessarily voluminous—indeed the quantity quite often appears less than normal. The spleen is often enlarged. As one would expect from the tucked up appearance during life, the gastro-intestinal tract of the subacute cases is shrunken; the stomach is small and contains usually a small quantity of food and fluid or fluid only, the small intestine is mainly empty and much shrunken, the large intestine contents are usually moister than normal until the small colon is reached where the contents are usually abnormally dry.

Cytological studies and biochemical examination of blood both point to the occurrence of an anhydraemia. Examination of the body tissues histologically has not yet revealed an essential pathological lesion and biochemical examinations have so far not shown changes of aetiological significance.

Differential Diagnosis.—There is no single diagnostic feature in grass sickness so that difficulty may arise especially in areas where few cases occur. Verminous aneurysms in the cranial

mesenteric artery are the most troublesome cause of mistakes in diagnosis and one is confronted with the difficulty of knowing with certainty in cases which have shown symptoms simulating grass sickness during life and revealing the presence of an aneurysm at *post-mortem* examination, whether one is dealing with one disease or two. Further it should be noted that in grass sickness the stomach is never distended with *solid* food and chronic dilatation of the large colon does not occur. Bowel obstructions from food (especially in the terminal portion of the ileum), from displacement or from tumours, folds of peritoneum, etc., should be looked for at *post-mortem* examination as these may give, on cursory examination, somewhat similar findings to those of acute grass sickness.

Aetiology.—The cause of the condition has not yet been determined, despite investigation extending over a period of some 30 years. Since cases occur mostly in horses at pasture, it was natural to suspect poisonous plants. However, a number of botanical surveys have failed to incriminate any plant and no known poisonous plant has been found to occur constantly in pastures where cases of grass sickness have occurred. No correlation with grazing on any particular class of pasture has been determined and soil analyses have not so far given any clue.

B. botulinus as the causal agent was at one time suspected by a group of workers; another worker suspected Borna disease. In view of its distribution, believed similar to that of grass sickness, the wingless insect *Sminthurus viridis* which feeds on clover was investigated as a possible causal factor and feeding experiments were carried out with negative results. *Clostridium welchii* toxin was found in the bowel contents of a number of acute cases which led to an extensive investigation involving an immunisation experiment. Horses immunised against *Cl. welchii* were found to be still susceptible to grass sickness.

It has been observed that the disease shows a low incidence in highly industrial areas where predatory animals are numerous and a high incidence in some areas where predatory animals have been extensively destroyed by man and a possible correlation between grass sickness and a disturbance in the predator-prey balance is being considered.

Attempts have been made to control the disease by feeding mineral supplements, but so far without success. Extensive experiments have been carried out in the past and are being continued at present in an attempt to demonstrate the presence of a filtrable virus.

A. B.

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CLINICAL COMMUNICATION

Some Observations on Milk Fever

A. ROBERTSON, J. W. BURGESS, A. MARR and BETSY J. C. MILNE

In view of the remarks in your issue of June 26th on "Loin Fall,"[1] and the addendum by Capt. Barker,[2] the following detailed studies of a few cases of milk fever may be of interest.

1. A dairy farmer had lost four cows from milk fever in succession through failure to respond to repeated subcutaneous injections of calcium borogluconate in doses varying from three to five ounces; the animals became bright and apparently normal but failed to get up with repeated and intensive stimulation of every feasible type and eventually had to be sent for slaughter. As seven others were due to calve in the following few weeks, it was decided to take repeated blood samples before and after calving to see if the source of the trouble could be traced. Two of the cows which had suffered from milk fever previously were disposed of by the owner just before calving and their subsequent history was not available. Three calved normally and uneventfully and though all the more important constituents of the blood were examined, the only consistent changes were in the serum calcium and inorganic phosphorus, both of which showed much the same tendency to fall as was noted by Duckworth and Godden[4] in their study of healthy cows at parturition. The other two animals went down with milk fever and as the main variations were again in the calcium and inorganic phosphorus fractions, attention will be paid to those constituents only in this record.

Cow 24 calved at 8 p.m. on March 2nd, 1948, and a blood sample was obtained 15 minutes later, when the animal was normal apart from slight excitement. Seen again at 11 p.m., when the next sample was taken, the animal was lying down and rather unwilling to rise but got up eventually rather stiffly after repeated stimulation. The following morning at 6 a.m. the animal was found down and unable to rise. When examined at 6.15 a.m., it was sitting up, blowing hard with a respiratory rate of 60 per minute and a temperature of 102° F. There was no evidence of coma and the animal struggled occasionally to rise but could not get its hindquarters up.

The owner's veterinary surgeon arrived at 7.30 a.m. and gave five ounces of calcium borogluconate subcutaneously and when next bled at 8.30 a.m. the animal was somewhat calmer but still could not rise. At 11 a.m. the owner 'phoned to say that the animal was still down and when examined at 12 noon it was found to be lying on its side, dull but still conscious and quite unable to get up. After a blood sample had been taken, the udder was inflated with air and the animal rose of its own accord five minutes after inflation was completed. Further blood samples were taken at 1.30 p.m. and 9.30 p.m. but no relapse occurred.

The blood picture of this animal (Fig. 1 overleaf) showed a marked fall in both calcium and inorganic phosphorus following calving. The serum calcium which had fallen from the previous normal range of 10 to 11 mg. per 100 ml. to 6·6 mg. immediately following calving was down to 5·8 mg. by the time the morning sample was taken. The borogluconate injection raised this slowly and by midday it had reached 8·6 mg. and inflation raised it rapidly to 10 mg. per 100 ml. when the animal rose. The inorganic phosphorus which, prior to calving, had varied from 6·6 to 6·8 mg. per 100 ml. fell so low that it could not be detected by the method of estimation in use (Briggs) and was certainly considerably below 1 mg. per 100 ml.; it rose slowly towards normal following the calcium injection and much more rapidly following inflation.

In the same byre at this time lay a cow which had had an attack of milk fever ten days previously and had failed to respond to repeated injections of calcium salts by both subcutaneous and intravenous routes. After repeated entreaties by the owner, we agreed to inflate this animal also but took no blood samples as we did not expect any results in view of the length of time the animal had been lying. To our surprise this animal got up with a little help ten minutes after the cessation of inflation and thereafter made an uneventful recovery.

Cow 31 which calved in the late afternoon nine days later remained outwardly normal till about 11 a.m. the following day although both calcium and inorganic phosphorus were abnormally low (Fig. 1). Then she was found to be rather unsteady and went down an hour later. Examined at 12.45 p.m., she was found to

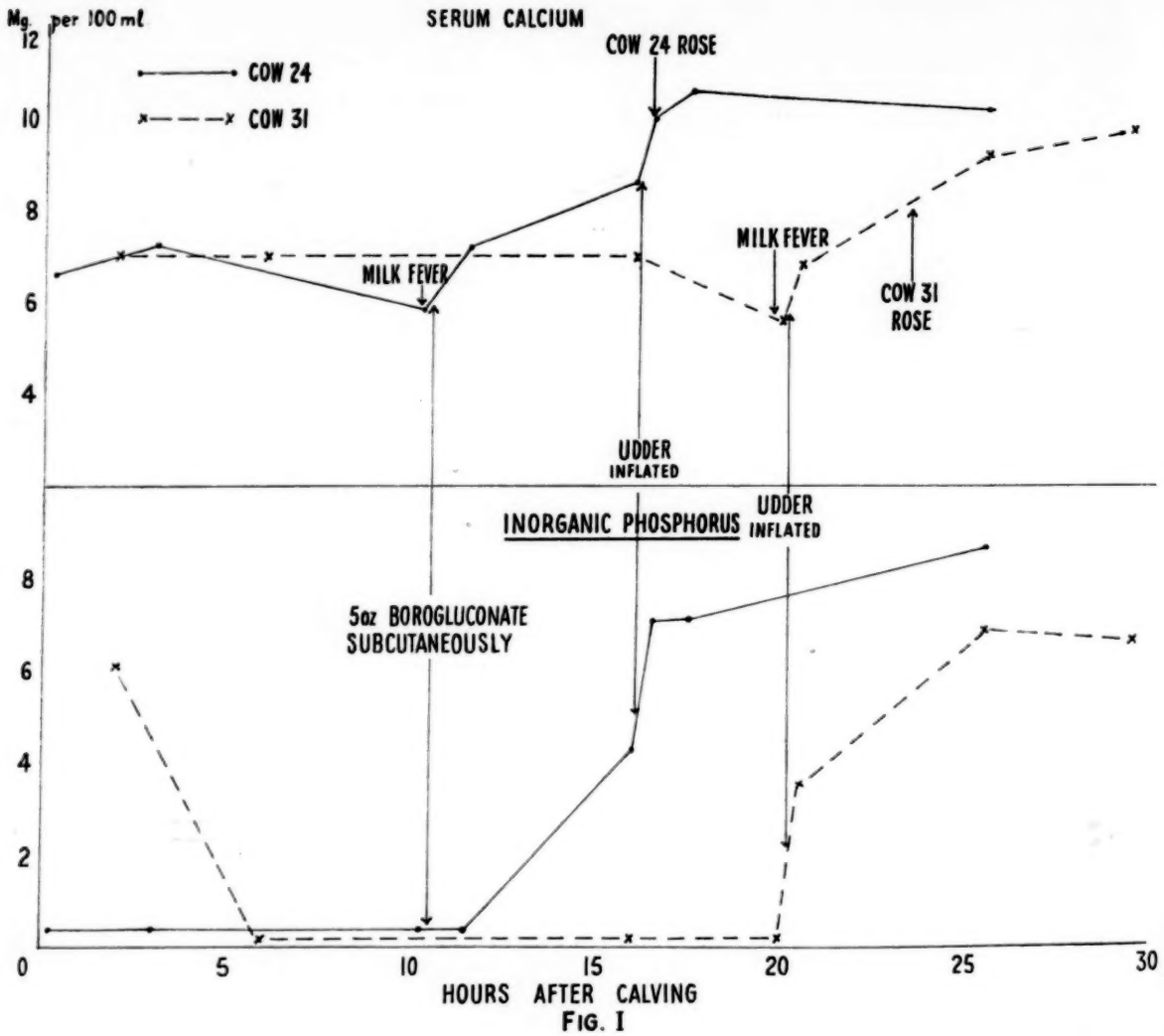

FIG. I

be lying quite normal in appearance but unable to rise. In view of the lack of success with calcium therapy on the previous occasions and the spectacular results of inflation, it was decided to treat this animal by inflation only. She appeared slightly more comatose immediately after inflation but this gradually passed off and the animal rose of its own accord about 4.30 p.m. Blood samples again showed a rapid rise of both calcium and phosphorus following inflation.

The intriguing biochemical feature of both cases was the extremely low inorganic phosphorus and its rapid rise following inflation and coincident with complete recovery. This along with the spectacular results of inflation on the ten-days-old case suggested that hypophosphataemia might have been a complicating factor involved in the previous aberrant results of calcium therapy. Some doubt was thrown on this theory, however, by the very next cases of milk fever investigated.

2. Called to a case of milk fever at another farm about midday on March 27th, we found two cases awaiting us on arrival.

One animal (Shamrock) had calved about 24 hours before and had gone down in the early morning. She was found to be fully conscious with normal temperature and respirations and simply unable to rise. The other (Pixie) had a history of difficulty in rising even before the calving, which had occurred during the previous afternoon; and she had not risen after calving although outwardly normal in every way. As only four ounces of calcium borogluconate were available, each animal was given two ounces intravenously, blood samples being taken before and after injection. No immediate favourable response to treatment was obtained with either animal although considerable elevation of blood calcium had occurred in each case (Fig. 2). At 3 p.m. both animals were still recumbent and Pixie rose on stimulation but Shamrock still could not get up. Each was given three and a half ounces of calcium borogluconate intravenously and Pixie was put out to graze. At 8 p.m. Pixie was quite recovered and Shamrock still unable to rise. Inflation was then resorted to in this latter case without immediate response but the animal rose on stimulation a couple of hours later.

The biochemical findings in this case were very different from those described above as Pixie had an abnormally low inorganic phosphorus even when able to rise, whilst in the case of Shamrock it was high throughout though it did rise following inflation.

As it seemed obvious that the story was not quite so simple as had appeared at first sight, a series of blood samples was then examined from cases of milk fever both before and after treatment with borogluconate and where possible after recovery. The findings in 17 cases which responded more or less normally to treatment are summarised in Table I.

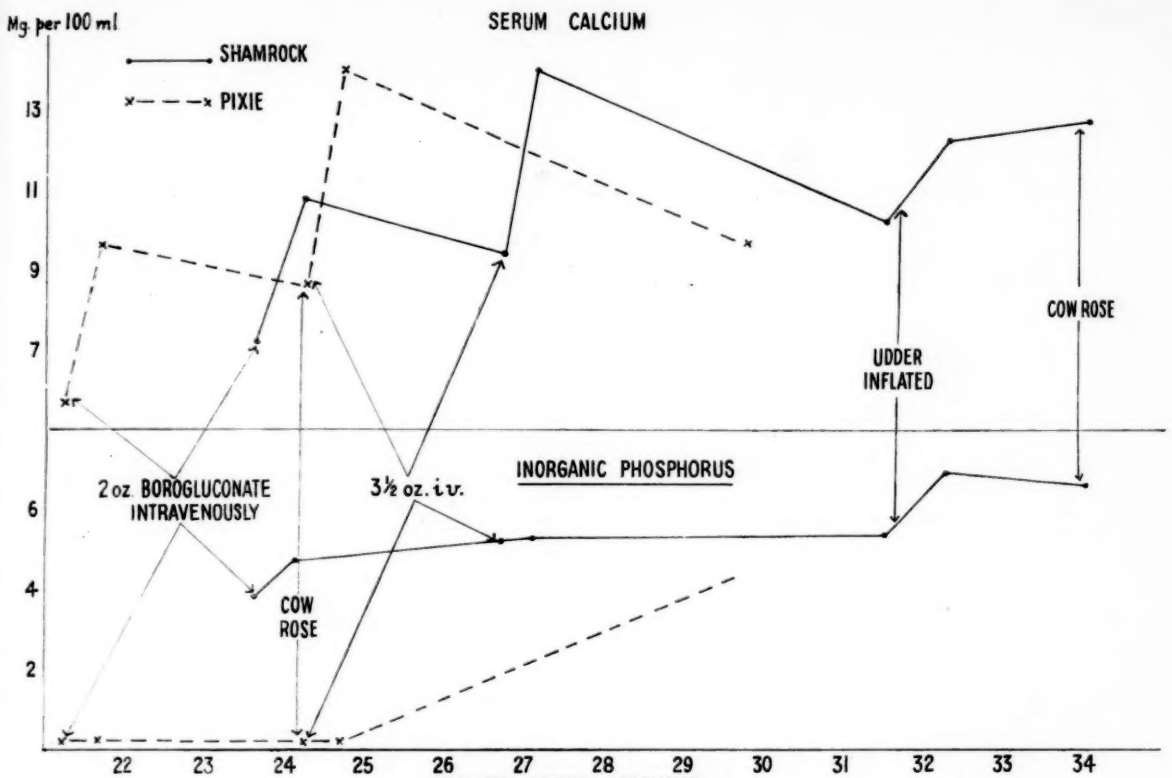

FIG. 2

TABLE I

Case No.	Dose of Borogluconate	Time between treatment and recovery	Before treatment Ca.	Before treatment Mg.	Before treatment In. P.	Blood analyses *(mg. per 100 ml.) Soon after treatment Ca.	Soon after treatment Mg.	Soon after treatment In. P.	After recovery Ca.	After recovery Mg.	After recovery In. P.
4	3½ oz. s.c. with 2 oz. $MgSO_4$	5 hours	5·8	0·91	Trace	6·4	1·69	Trace	10·0	3·43	5·38
7	4 oz. i.v. / 2 oz. i.v. plus inflation	15 minutes; relapse in 24 hours / 3 hours; no relapse	4·6 / 4·5	2·82 / 2·23	2·7 / 2·07	16·6 / 7·0	2·79 / 2·74	2·9 / 4·29	16·6 / 10·6	2·79 / 3·08	2·9* / 4·58
8	3 oz. i.v.	1 hour	6·0	3·63	1·71	15·2	3·91	2·56	8·8	3·94	5·61
9	2 oz. i.v. 2 oz. s.c.	A few minutes	5·0	2·84	5·52	9·2	2·79	5·93	9·2	2·93	5·93
11	3½ oz. s.c.	Within 6 hours	5·6	2·23	1·56	6·2	2·29	Trace	—	—	—
12	3½ oz. i.v.	7 minutes	3·2	2·78	Trace	12·4	2·78	3·6	12·4	2·78	3·6
13	2 oz. i.v. 2 oz. s.c.	15 minutes	5·6	2·93	2·05	8·0	2·75	2·5	8·0	2·75	2·5
14	3½ oz. s.c.	Within 12 hours	5·0	2·62	2·41	5·6	2·57	2·37	—	—	—
15	3½ oz. i.v.	Within ½ hour	5·4	2·76	2·21	12·4	2·71	2·39	12·4	2·71	2·39
17	3 oz. i.v. 1 oz. s.c.	20 minutes	6·6	2·28	2·49	14·4	2·28	2·77	14·4	2·28	2·77
19	4 oz. i.v.	Within ½ hour	5·2	2·44	2·06	9·6	2·43	2·13	—	—	—
21	3½ oz. iv.	15 minutes	5·6	2·10	2·34	10·6	2·16	2·41	10·6	2·16	2·41
26	4 oz. i.v.	Within 2 hours	4·2	2·36	1·75	13·6	2·35	1·75			—
27	4 oz. i.v.	5 minutes	6·2	2·29	1·5	17·6	2·29	1·6	17·6	2·29	1·6
28 (a)†	2 oz. i.v. 1 oz. s.c.	Several hours	6·0	2·58	2·82	8·2	2·48	1·34	—	—	—
(b)	Ditto	20 minutes	5·0	2·55	2·09	11·6	2·55	3·52	11·6	2·55	3·52
(c)	Ditto	1 hour	7·8	2·38	2·61	11·6	2·37	2·84	—	—	—
		Mean:	5·4	2·48	2·1	10·9	2·55	2·5	11·85	2·81	3·6

* First recovery; relapse 24 hours later.
† Relapse following previous treatment with borogluconate.

It will be noted that in practically all cases the inorganic phosphorus was low during milk fever and in nearly three-quarters of the cases it was below the lowest level (2·42 mg. per 100 ml.) recorded by Duckworth and Godden in normal healthy cows at parturition. Immediately following treatment there was an increase in the inorganic phosphorus in at least 12 of the cases and those animals from which blood samples were obtained after recovery showed on an average a 70 per cent. rise in this constituent. Although in about half the cases the increase was small and although there was a wide variation in the level, statistical analysis of the results showed that the rise was significant.

More striking evidence in favour of the role of phosphates in recovery from milk fever was obtained in four cases where the response to calcium therapy was not quite so favourable:—

3. *Case* 16. A cow three days calved was noticed to be showing signs of excitement at 8 a.m. on May 27th and went down about an hour later. When seen the cow was recumbent with the characteristic milk fever kink in the neck and stiffness of the limbs. Blood findings at this stage were Ca 6·2 mg., Mg 0·81 mg. and In. P. 3·5 mg. per 100 ml. Four ounces of borogluconate intravenously produced no immediate response though the figures within 15 minutes were 19·6, 0·80 and 3·35 mg. respectively. Three hours later the cow was still recumbent. She got up with some encouragement but her movements were inco-ordinate and at first she fell over again. She then made a voluntary effort and succeeded in getting up and remained standing. Blood analysis at this stage revealed a calcium level of 11·2 mg., magnesium 0·98 and inorganic phosphorus 4·16 mg. per 100 ml. No subsequent relapse occurred.

4. *Case* 20. A cow went down with milk fever in late evening of June 14th and when seen at 10.15 p.m. it was prostrate and practically comatose with the following blood picture—Ca 5·2 mg., Mg 2·27 mg. and In. P. 1·6 mg. per 100 ml. Two ounces of calcium borogluconate intravenously raised these levels to 11·6, 2·28 and 2·46 respectively within half an hour but the animal, though brighter, did not get up and was still unable to rise next morning when the levels were Ca 8 mg., Mg 2·56 mg. and In. P. 3·31 mg. per 100 ml. Another three ounces of calcium borogluconate intravenously plus inflation produced immediate recovery but unfortunately no blood sample was obtained.

5. *Case* 23. A case of milk fever which occurred 12 hours after calving with the following blood levels in mg. per 100 ml. – Ca 5·4, Mg 2·46 and In. P. 1·93. Four ounces of calcium borogluconate intravenously altered these figures to 15·2, 2·45 and 2·43 respectively without response. The owner was instructed to 'phone if the cow had not regained her feet in three hours. He did so but when examined the cow was found to be eating normally and rose on persuasion. The blood figures then were Ca 10·4 mg., Mg 2·36 mg. and In. P. 5·12 mg. per 100 ml.

6. *Case* 24. Cow found down in a field 13 hours after calving and unable to rise; blood picture, Ca 5 mg., Mg 2·53 mg. and In. P. 1·65 mg. per 100 ml. Four ounces of calcium borogluconate intravenously produced no improvement for about four hours when the animal rose and was walked back to the byre with some slight difficulty. She went down again in the byre and a blood sample revealed the following figures, Ca 10 mg., Mg 2·37 mg. and In. P. 1·69 mg. per 100 ml. The udder was then inflated and the animal rose completely normal five minutes after the completion of inflation with a blood calcium of 12·2 mg., magnesium 2·66 mg. and an inorganic phosphorus of 5.95 mg. per 100 ml.

Discussion

A study of 25 cases of milk fever has shown that, while the evidence from those cases which responded normally to calcium therapy may appear somewhat conflicting, six out of the seven cases which did not respond so well gave results which tend to support Capt. Barker's theory[3] that hypophosphataemia is a complicating factor in milk fever cases which fail to rise after calcium therapy. The other case (Pixie) is difficult to explain as she rose while the inorganic phosphorus was still too low to be detected. It is interesting to note, too, that whilst calcium therapy alone appeared in most cases to produce a slow elevation in inorganic phosphorus, where inflation was resorted to the rise in this constituent was both rapid and marked. This may explain the observation of many practitioners that in some cases of milk fever and particularly on certain farms, inflation is a more reliable and more successful form of therapy than calcium borogluconate injections.

REFERENCES

[1] ANON. (1948.) *Vet. Rec.* **60.** 319.
[2] BARKER, J. R. (1948.) *Vet. Rec.* **60.** 351.
[3] ———. (Personal communication).
[4] DUCKWORTH & GODDEN (1940) *J. Dairy Res.* **11.** 9.

ABSTRACT

[Vaccination against Bovine Brucellosis with Avirulent Organisms combined with Glucidolipidic Antigen. LISBONNE, M., RAMON, G., & QUARTREFLAGES, H. (1947.) *Bull. Acad. vét. France,* April, 1947. Abstr.: *J. Amer. vet. med Ass.* **111.** 184-185.]

The work recorded is essentially a description of experiments carried out over six years on 77 vaccinated heifers with a germ-free preparation AGL (see below), which will reinforce the effects of live culture vaccination.

They used a smooth strain of *Brucella abortus* (B 112) mixed with a glucidolipidic antigen extract of *Brucella melitensis* (AGL). B 112 is non-pathogenic for guinea-pigs, and alone it does not vaccinate. Likewise, repeated injections of AGL did not vaccinate although they stimulated the production of antibodies, reinforced resistance to slight infection, produced precipitins, and provoked a state of allergy. But when the two products were used simultaneously, or when the B 112 injection was followed by an AGL injection, such animals could be injected with billions of the organisms without a single isolation of the injected bacteria from the blood stream or the lymphatic organs.

When 0·5 c.c. of AGL was injected subcutaneously into guinea-pigs which had been inoculated several weeks previously with large doses of B 112, the antibody index mounted to 1:1,280 or 1:2,560 in 15 days. Injection of challenge doses of *Br. melitensis* at this time showed that eight of ten guinea-pigs resisted all pathogenic effects. There were no lesions at autopsy, no positive cultures, and their blood-serum, agglutination titres dropped to less than 1:20 in all instances.

In view of these successes, nine ewes were vaccinated and then checked regularly by means of bacteriologic and serologic tests for three months. None of the vaccinates showed infection, although 180 examinations of various kinds were made. The controls were found to be infected, showing positive serum and milk agglutination titres and positive cultures, although none aborted.

Cattle were then vaccinated, in herds and in regions where abortion was an economic calamity, some herds having an abortion rate of 80 per cent.

For the field trials, serologically and bacteriologically sound heifers less than five months old were selected for vaccination. Three methods of inoculation were used.

(1) The injection of the B 112 microbic suspension followed in 45 days by the injection of AGL.

(2) Simultaneous injection of B 112 and of AGL at separate points.

(3) A single injection of a mixture of B 112 and AGL. In each case the bacterial injection consisted of 1 c.c. containing 20 billion organisms. Intradermic and hypodermic routes of inoculation were used and both yielded the same results.

Results.—Immunity was maintained or reactivated by a single 4 c.c. injection of AGL in the early experiments, and by the addition of one billion organisms to this antigen in later trials. The duration of immunity could not be fixed since it was reactivated every eight to ten months—being careful to avoid reinjection after the fifth month of pregnancy.

The intradermic infection (in the dewlap) left a nodule the size of a pea for about six months: the hypodermic injection (behind the shoulder) left no trace.

Lactation was diminished for a day in only one instance, following some 200 or more inoculations.

Of 77 animals inoculated, there were 118 normal births and only one abortion over the period of six years.

The agglutination titre of the vaccinates was about 1:100 two months after vaccination, and negative or nearly so at the time of reactivation in about eight months. It then rose again to about 1:780 and slowly receded to 1:10 in eight months.

Only once was it possible to recover *Br. abortus* from the blood, milk or vaginal exudate.

N. S. B.

THE FARMERS' CLUB

Mr. George N. Gould, M.R.C.V.S., Southampton, will read a paper on "The Veterinary Surgeon and the Dairy Herd" before members of the Farmers' Club in London on November 1st, at 2.30 p.m. Mr. J. W. Bruford, M.R.C.V.S., Sevenoaks, and Mr. John Edgar, Walkford Farm, New Milton, Hants., will be the other speakers.

ACKNOWLEDGMENTS

We have to acknowledge the kind co-operation of Mr. E. G. Prentice, B.SC., M.R.C.V.S., and Mr. G. C. Rafferty, B.SC., M.R.C.V.S., in supplying samples and data from some of the cases listed in Table I.

REVIEW

[" **Special Pathology and Therapeutics of the Diseases of Domestic Animals.**" Hutyra & Marek: 5th Edition trans. and ed. by Professor J. Russell Greig, PH.D., M.R.C.V.S., F.R.S.E. Three volumes, 2,428 pages, with numerous illustrations and coloured plates. 7 guineas net. London: Baillière, Tindall & Cox.]

This fifth edition of "Hutyra & Marek" has been produced under very difficult conditions which have been responsible for many shortcomings, but the editor is to be congratulated for having made this reference book again available. Such enormous strides have been made in the last ten years in veterinary medicine both with respect to aetiology and therapeutics that it is absolutely impossible to produce any quite up-to-date work in book form. Indeed, no sooner has an apparently complete survey been concluded than new developments and discoveries are sure to change the picture.

Vol. I deals entirely with contagious or infectious diseases and protozoan infections, while Vol. II deals with local diseases systematically which are continued in Vol. III in addition to diseases of the blood and blood-producing organs and endocrine and metabolic diseases. It will thus be seen that there is no change in the order of presentation. Many of the illustrations have suffered considerably from the inadequate quality of the paper.

The editor is apparently quite conscious of the defects so far as recent developments are concerned and hopes to publish addenda from time to time in order to keep the work up to date. For general purposes, however, "Hutyra & Marek" is still the best work available for reference in veterinary medicine.

The publishers have done well within the limitations of labour and the supply and quality of materials available.

NOTES AND NEWS

Diary of Events

Oct. 20th.—Meeting of the Ayrshire Division, N.V.M.A., at Auchencruive, 3 p.m.

Oct. 20th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, 1, Wimpole Street, W.1, 5 p.m.

Oct. 21st.—Meeting of the Western Counties Division, N.V.M.A., at Exeter (Rougemont Hotel), 2 p.m

Oct. 21st.—Meeting of the South Eastern Division, N.V.M.A., at the Royal Veterinary College, Camden Town, N.W.1, 2.30 p.m.

Oct. 28th and 29th.—N.V.M.A. Conference on "Grassland and Animal Health," at the Wellcome Foundation, 183, Euston Road, London, N.W.1.

Oct. 28th.—Meeting of the Lincolnshire and District Division, N.V.M.A., at Lincoln (Saracen's Head Hotel), 2.15 p.m.

* * * * *

N.V.M.A. Conference on "Grassland and Animal Health"

With our issue of October 9th we circulated to members, as an inset, a copy of the final programme of the N.V.M.A. Conference on "Grassland and Animal Health" to be held at the Headquarters of the Wellcome Foundation, 183-193, Euston Road, London, N.W.1, on October 28th and 29th, together with a detachable slip, upon which members were requested to intimate their luncheon requirements, returning signed to the General Secretary not later than October 25th. *Members who propose to attend the Conference, but who will not require the arranged luncheon, are nevertheless asked to inform the General Secretary of their intention to be present.*

Members wishing to do so may bring one or two of their agricultural clients to the conference if they would be interested. Tickets for such *non-members* of the Association are available on request from the General Secretary.

* * * * *

PERSONAL

Marriage.—Grater—Slade.—On Sunday, September 28th, 1948, at Newtown Parish Church, George Stephen Grater, M.R.C.V.S., to Betty Eileen Elizabeth Slade.

. . . . .

Mr. W. J. McIlroy, M.R.C.V.S., sailed on Friday last for the Antarctic as a member of the expedition on board the largest of the whaling "factory" ships—the "Balaena," recently put into commission. He will be away about ten months.

R.C.V.S. OBITUARY

Bryan, Cecil Eardley Wilmot, Major R.A.V.C. (T.A.), T.D., "Wilberlea," Whyte Melville Road, Kirkcaldy. Graduated London, July 10th, 1913. Died September 26th, 1948.

Jones, Thomas Eaton, F.R.C.V.S., "Red Cot," 17, Beech Lawn, Waterloo, Liverpool. Graduated London, December 14th, 1894; Fellowship May 13th, 1911. Died October 5th, 1948; aged 76 years.

Mr. Thomas Eaton Jones, F.R.C.V.S.

His colleagues in the profession will mourn the loss of a highly esteemed member in Mr. Thomas Eaton Jones, F.R.C.V.S., Chief Veterinary Officer to Liverpool Corporation for 35 years. Mr. Eaton Jones entered the service of the Corporation in 1897, retiring in 1932.

We hope to publish a full notice in an early issue; in the meantime it may be recalled that Mr. Eaton Jones' great interest—and pride—lay in the splendid stud of Corporation horses, numbering over 500 animals, under his care, and that for many years he was hon. secretary to the renowned Liverpool May Horse Parade.

Major C. E. W. Bryan, M.R.C.V.S.

We regret to record above the death, after a long illness, of Major Cecil Eardley W. Bryan, who practised widely throughout East Fife and was a highly esteemed resident in Kirkcaldy.

A native of the South of England, Major Bryan, after qualifying at the London College, became an assistant in Yorkshire. Shortly after the first World War he took over the practice of Mr. A. McKenzie in Kirkcaldy and was for some years dairy inspector in Kirkcaldy.

During the 1914-18 war he served in the Royal Army Veterinary Corps and was demobilised with the rank of Captain. With the rank of Major, he served for three years with the Fife and Forfar Yeomanry (T.A.), as chief veterinary officer. He gave up the appointment when the Yeomanry became an Armoured Car Regiment.

Major Bryan, busy practitioner as he was, had time to add his name to the roll of well-known local sportsmen. He was very fond of cricket and was a member of Dunnikier C.C. for 25 years. During this period he was often captain. He left Dunnikier to form a side of his own known as the Major Bryan XI which toured Fife and neighbouring counties. The team included many well-known East of Scotland cricket personalities and played friendly games with many clubs. Major Bryan (says the *Fifeshire Advertiser*) possessed a merry and carefree nature which made him an admirable captain. He also took a great interest in young cricketers and spent many an hour patiently coaching them at the practice nets.

He was also a very good shot and latterly was a keen member of Kirkcaldy Bowling Club.

Deep sympathy is felt for the widow and family in their bereavement.

* * * * *

SOMERSET MACHINE MILKING CONTEST

Somerset has concluded a competition, the first of its kind to be organised in the county, designed to stimulate a better system of cleaning and operating milking machines. Prizes won in this machine milking contest were presented by the Countess Waldegrave at a recent rally of dairy farmers at Wells Town Hall.

Earl Waldegrave, Chairman of the Somerset Agricultural Executive Committee, presided, and an address on "Bovine mastitis and its control" was given by Dr. A. W. Stableforth, of the Ministry of Agriculture's Veterinary Research Laboratory.

Dr. Stableforth said that a cow which has been infected by mastitis and cured by treatment with penicillin is just as liable to reinfection as any other cow, and he explained why penicillin is not in unlimited supply for farmers' own use. With regard to "summer" mastitis no cure had been found, he said, but a delay of a few hours in reporting such a case would most likely result in the death of the animal. He stressed the importance of good hygiene in the cowshed, and recommended using a separate cloth for washing each cow's udder as a means of avoiding the spread of mastitis infection.

* * * * *

Three German agricultural scientists, members of a group of 13 now in Britain—Professor Richter, director of the Animal and Livestock Institute, Mariensee; Dr. Ehlinger, of Weilerhof, and Dr. E. S. Schlange, of the Agricultural University of Berlin—recently visited the Royal (Dick) Veterinary College, Edinburgh, the Animal Diseases Research Station, Gilmerton, the S.C.W.S. farm at Bonnington, near Ratho, and the Institute of Animal Genetics.

Scheme for the Control of Diseases of Dairy Cattle

STATEMENT SHOWING THE NUMBER OF UNDERTAKINGS NOTIFIED TO THE MINISTRY OF AGRICULTURE DURING THE QUARTER ENDED SEPTEMBER 30TH, 1948

County	Undertakings Notified		Total Undertakings		
	During Quarter	Previously	Number	Number of Cattle: Cows	Number of Cattle: Heifers
ENGLAND					
Bedford	—	5	5	84	32
Berks	—	31	31	939	655
Bucks	—	6	6	172	192
Cambridge	—	—	—	—	—
Cheshire	—	97	97	3,062	1,275
Cornwall	—	—	—	—	—
Cumberland	—	9	9	387	270
Derby	16	172	188	4,930	2,772
Devon	2	88	90	1,252	777
Dorset	—	3	3	78	49
Durham	2	119	121	3,116	1,414
Essex	2	80	82	2 919	2,242
Gloucester	1	21	22	690	720
Hampshire	3	95	98	3,460	2,738
Hereford	—	3	3	149	98
Hertford	2	21	23	764	551
Hunts	—	—	—	—	—
Isle of Ely	—	—	—	—	—
Isle of Wight	—	—	—	—	—
Kent	5	47	52	1,375	993
Lancs	5	56	61	1,999	849
Leics.	3	56	59	1,405	1,192
Lincs. (Holland)	—	—	—	—	—
Lincs (Kesteven)	—	8	8	84	81
Lincs (Lindsey)	—	8	8	178	102
Middlesex	1	—	1	12	5
Norfolk	—	31	31	1,168	861
Northants	1	20	21	441	553
Northumberland	3	25	28	872	624
Notts	1	91	92	2,121	982
Oxford	—	7	7	207	222
Rutland	—	—	—	—	—
Salop	2	58	60	7,789	1,108
Soke of Peterborough	—	—	—	—	—
Somerset	2	82	84	2,107	1,310
Staffs	3	85	88	2,754	1,726
Suffolk (East)	1	13	14	271	219
Suffolk (West)	3	18	21	456	375
Surrey	—	30	30	886	521
Sussex (East)	3	48	51	1,646	1,156
Sussex (West)	5	27	32	870	700
Warwick	5	47	52	1,611	885
Westmorland	—	2	2	27	21
Wilts	—	22	22	705	477
Worcester	7	63	70	1,374	739
Yorks (E.R.)	1	32	33	562	468
Yorks (N.R.)	3	50	53	1,037	681
Yorks (W.R.)	5	84	89	2,127	1,940
TOTAL, ENGLAND	87	1,760	1,847	56,084	31,765
WALES					
Anglesey	—	10	10	151	107
Brecon	—	3	3	73	50
Caernarvon	—	16	16	282	124
Cardigan	2	23	25	550	344
Carmarthen	5	112	117	2,229	1,189
Denbigh	2	9	11	222	135
Flint	—	21	21	545	220
Glamorgan	2	28	30	501	230
Merioneth	—	—	—	—	—
Monmouth	—	8	8	183	134
Montgomery	—	1	1	12	11
Pembroke	—	7	7	199	225
Radnor	—	1	1	5	1
TOTAL, WALES	11	239	250	4,952	2,770
TOTAL, ENGLAND AND WALES	98	1,999	2,097	61,036	34,535
SCOTLAND					
Aberdeen	—	13	13	782	415
Angus	—	12	12	52	331
Argyll	—	—	—	—	—
Ayr	—	10	10	351	214
Banff	—	1	1	12	20
Berwick	—	1	1	22	7
Bute	—	—	—	—	—
Caithness	—	—	—	—	—
Clackmannan	—	1	1	20	15
Dumfries	—	9	9	430	337
Dunbarton	—	1	1	12	10
East Lothian	—	1	1	20	8
Fife	—	21	21	810	516
Inverness	—	1	1	52	35
Kincardine	—	1	1	42	53
Kinross	—	3	3	59	41
Kirkcudbright	—	5	5	693	597
Lanark	—	2	2	100	78
Midlothian	—	—	—	—	—
Moray	—	—	—	—	—
Nairn	—	—	—	—	—
Orkney	—	—	—	—	—
Peebles	—	—	—	—	—
Perth	—	7	7	138	121
Renfrew	—	3	3	139	98
Ross-shire	—	3	3	172	72
Roxburgh	—	—	—	—	—
Selkirk	—	—	—	—	—
Stirling	—	6	6	182	181
Sutherland	—	2	2	35	32
West Lothian	—	1	1	17	29
Wigtown	—	12	12	1,000	517
Zetland	—	—	—	—	—
TOTAL	—	116	116	5,725	3,727

Notes.—(1) Operative periods of undertakings: 1 year, 538; 2 years, 127; 3 years, 1,438. (2) Undertakings renewed for further periods: 1 year, 40; 2 years, 2; 3 years, 35. (3) Undertakings not renewed at end of operative periods: 312. (4) The figures showing the number of undertakings notified during the month relate to entirely fresh undertakings and do not include undertakings renewed for further periods. Undertakings which have been cancelled or not renewed are not included in the figures for previous notifications.

Notes.—(1) Duration of undertakings: 1 year, 30; 2 years, 1; 3 years, 85. (2) Undertakings renewed for a further period (included in the second column of the statement): 1 year, 155; 2 years, 9; 3 years, 80. (3) Undertakings expired and not renewed (not included in the second column of the statement): 289. (4) The figures in the first column of the statement relate to entirely fresh undertakings.

* * * * *

INSPECTION OF MEAT

The following correspondence recently appeared under the above heading, in the *Manchester Guardian*:

To the Editor of the Manchester Guardian.

Sir,—My attention has been drawn to the alarming and quite inaccurate statements reported in your issue of yesterday, from the Conference of the National Veterinary Medical Association at Southport, on Monday, September 13th. These allegations seem to be hardy annuals at this particular gathering, and after similar utterances in 1943 they were made the subject of a question in the House of Commons, and brought forth a rebuke from the then Minister of Health himself that "the statements were grossly exaggerated."

I can assure the general public that whilst improvements can be made, the bulk of home-killed meat in this country is properly inspected by qualified and competent meat inspectors before being delivered to the consumer, a view which has been publicly supported on more than one occasion by Mr. Grace, the veterinary adviser to the Ministry of Food. To suggest that no improvements have been made in the last 50 years borders on the ridiculous. The small number of food poisoning cases caused by meat and meat products is less than in most countries, and this is a vital test of the soundness of meat and the efficiency of the inspection and supervision, especially when allowance is made for the fact that some causative organisms are not detectable by normal methods of inspection.

It is also difficult to understand the statement of Dr. W. R. Wooldridge regarding the absence of standards for home-killed meat, as the speaker cannot be unaware that over a quarter of a century ago the Ministry of Health issued a memorandum for the guidance of the Inspectorate, known as Memo 62/Foods. Admittedly, this memorandum is only a form of recommendation and my association has asked the Government repeatedly to give it legal enforcement, as is the case in Scotland, but fortunately the trade generally accepts the suggestions in this document as fair and reasonable, and if these recommendations are adhered to, the public is adequately protected.

Yours, etc.,

HARRY PRIESTLEY,
Chairman of the General Council,
Sanitary Inspectors' Association.

19, Grosvenor Place,
London, S.W.1.
September 15th, 1948.

. . . . .

To the Editor of the Manchester Guardian.

Sir,—The letter from Mr. Harry Priestley, Chairman of the General Council, Sanitary Inspectors' Association, which you published on September 18th, calls for comment.

The statements made on the subject of meat inspection at the N.V.M.A. Congress are indeed alarming, but they are not—as Mr. Priestley claims—inaccurate. As to his use of the phrase "hardy annuals" to describe our allegations, we accept this gladly and without challenge, for the N.V.M.A. has indeed for years past been trying to secure reform.

If the Sanitary Inspectors' Association are satisfied with the present situation, we are not; nor, we believe, is the informed public. Mr. Priestley's view is not shared by the British Medical Association, who at their Annual Meeting held at Cambridge recently passed the following resolution:

"That this meeting is not satisfied with the present supervision of production or distribution of foods of animal origin and asks the Council of the Association to approach the National Veterinary Medical Association in order that a Joint Committee of the two bodies may investigate the matter and report to the proper authorities."

Mr. Priestley refers to "the small number of food poisoning cases caused by meat and meat products." A letter in the *Lancet* of September 11th stated, "Cases of food poisoning are becoming far too frequent."

It would seem, therefore, that any wishful thinking is being done not by the N.V.M.A. but by the Sanitary Inspectors' Association. Is the reason for this a fear that the veterinary profession wishes to displace sanitary inspectors? If so, we can at once dispel this idea. The N.V.M.A. fully appreciates that the sanitary inspector, engaged full-time on food inspection, has a valuable part to play.

We do, however, wish to see all meat inspection placed under veterinary supervision as it is in Denmark, Germany, the United States, etc., because the veterinary surgeon is both qualified to carry out the *ante-mortem* inspection of an animal, and is trained in pathology and bacteriology, which the sanitary inspector is not.

Yours faithfully,

R. F. Montgomerie.
President of the National Veterinary Medical Association.

36, Gordon Square,
London, W.C.1.
September 24th, 1948.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents are requested to write as briefly as possible.

OVAROHYSTERECTOMY IN THE BITCH

Sir,—Mr. E. W. Jones, in his interesting contribution on Ovarohysterectomy in the Bitch, states a truism when he expresses the view that wound breakdown "invariably co-exists with the use of cat-gut." However, the students at the New York State Veterinary College, could, in my opinion, not only reduce their incidence of wound breakdown, but virtually eliminate it, if the use of cat-gut in mid-line incisions was banned.

Mr. Jones describes an admirable vertical mattress suture for skin only—if this suture was modified to include all layers of the abdominal wall, using silk-worm gut, then no wound breakdown would occur.

This latter method of closure of a mid-line abdominal incision was introduced by T. Norman Gold, of Redditch, as long as 20 years ago.

Yours faithfully,

T. L. Griffiths.
Veterinary Infirmary,
Redditch, Worcs.
October 9th, 1948.

* * * * *

LONG-CONTINUED LACTATION WITHOUT PREGNANCY

Sir,—The case described by J. Cochrane-Dyet (*Vet. Rec.*, 1948. *60*, 493) of a Guernsey cow still lactating seven years after calving is by no means a "record."

Several cases of prolonged lactation in the dairy cow have been reported in the literature, probably the most comprehensive survey in the English language being that of Linton (1929, 1934), who collected eleven cases and records the case of a Jersey cow still giving 18 lb. of milk daily after 18 years' continuous lactation. A Friesian cow in New Zealand has also recently been reported to have been in milk for nine years after a single calving, during which time she gave 122,000 lb. of milk, with an average annual butterfat yield of over 550 lb. (Anon., 1948).

Espe (1946), whilst discussing the persistency of lactation in the cow, states that, "Most dairy cows, if suitably fed and not bred, will continue to milk indefinitely but at a rate much below their maximum capacity."

It is certain that many cows would lactate for considerable periods if given the chance but the exceptional animals would be those that maintained an economical yield.

References

Anon. (1948.) *The Scottish Farmer*. April 17th.
Espe D (1946.) Secretion of Milk. 3rd Edn. Iowa.
Linton, R. G. (1929.) *Vet. Rec.* **9** (N.S.). 652.
——. (1934.) *Ibid.* **14** (N.S.). 691.

Yours faithfully,

J. L. Linzell.
7, Blackwood Crescent,
Edinburgh, 9.
October 8th, 1948.

CRUELTY TO ANIMALS

Sir,—In your issue of September 25th Mr. J. W. Rainey remarks on "the apparent indifference of our profession as a whole to humanitarian questions affecting domesticated animals." As a 75-year-old retired practitioner the same thought often occurs to me. In many cases, obviously, having to earn our living, we cannot always speak our minds. But, allowing for that, we should more often raise our voices in protest, for instance, over such cruelties as that to which Major Rayner drew attention in the House of Commons recently.

There is the scandal of animals slaughtered for food brutally and callously. A more vocal profession might have forced Parliament to amend the Humane Slaughtering Act to include all animals under any conditions. There is the needless docking of horses and the senseless overstocking of cows in our markets, while those of us whose practices do not include racehorses might agitate for modification of those dangerous high jumps at race meetings: surely it is a scandal in a civilised country like ours to read of three horses having to be shot for broken limbs at one race meeting.

Could not our lady members, so welcomed into the profession by us older members (who never thought they would ever be admitted) give a lead in these matters? The longer I live and the more I think about it, the smaller the gap becomes between what my late partner termed "the so-called lower animals" and ourselves.

Yours faithfully,

R. Glave Saunders.
2, Alexandra Terrace, Exmouth.
September 26th, 1948.

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HEALING THE WOUNDS OF EUROPE

"A Network of Exchange Visits"

Sir,—On March 20th of this year you kindly published a letter from me in which I invited a young German veterinary student to be my guest for the summer vacation. I should like to tell you now that the scheme proceeded from this point to complete success, and resulted in a fine piece of co-operation between the German and British veterinary professions, and that I personally have gained from it that most priceless of all possessions—a true friend.

At the instance of a gentleman in London who read my letter, I repeated my offer to Dr. Zeller, the editor of the *Berliner und Münchener Tierärztliche Wochenschrift*. Its publication in this journal met with a most warm-hearted response from the whole German veterinary profession, and finally I was happy to welcome to this country a young student of the Tierärztliche Hochschule, Hannover—Herr Gerd Lendner from Schwäbisch Hall, South Germany. Here was a true European; a man with a wide sympathy towards his fellow-men and animals and a spirit which thrived upon the best in art, philosophy and science.

We are both convinced by our experiencees together that this personal contact between the people is the most important thing in Europe to-day. The choice lies clearly before us—either Europe lives as a unity or Europe dies. It is up to us as a learned profession to lead the way towards healing the wounds of our old Europe and making her physically and spiritually sound again. This task should appeal to us particularly as surgeons.

As students we have all enjoyed our experiences seeing practice with veterinary surgeons. How much greater would be this pleasure if we had a network of exchange visits between students and veterinary surgeons throughout Europe. I believe this scheme would be welcomed in Germany, and personally I should do all in my power to help.

Next year we are having the International Veterinary Congress in London. It is fundamentally necessary that invitations be sent to leaders of the German veterinary profession now.

Finally, I offer my sincere thanks to Mr. Carter, of the Education Section, British Control Commission; Dr. Zeller, of Stuttgart; Dr. Wagener, of Hannover, and a gentleman in London who I know would prefer to be nameless, and who has suffered more than most of us in this shameful period of European history. Without their help the scheme would not have succeeded.

Yours faithfully,

F. B. Edwards.
"Newgate,"
Llanbrynmair, Montgomeryshire.
September 30th, 1948.

Advertiser's Announcement

Evans Medical Supplies, Ltd., of Liverpool and London, are now issuing a Lamb Dysentery Serum of increased potency, which is fully effective in those cases where their "Mixed Lamb Dysentery Serum and Pulpy Kidney Serum" was preferred.

This latter product is therefore being withdrawn as from October 18th, 1948.

Owing to the increased production costs over the last two years, the prices of Lamb Dysentery Serum (Evans) have had to be increased from October 1st, 1948. The new prices, which are exempt from Purchase Tax, are as follows: 50 c.c. containers 12s. each; 100 c.c. containers 22s. 6d. each.

NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

Conference on "Grassland and Animal Health"

OCTOBER 28TH AND 29TH, 1948,

AT THE HEADQUARTERS OF THE WELLCOME FOUNDATION,

183-193, EUSTON ROAD, LONDON, N.W.1

FIRST DAY, OCTOBER 28TH:

11 a.m.	Official opening of the Conference.
11.15 a.m.	Opening paper: "Grassland Development and the Expansion Programme for England and Wales." Mr. W. D. Hay, Grassland Development, Ministry of Agriculture.
12.30 p.m.	Luncheon.
2 p.m.	"Grassland Management for Animal Production." Sir George Stapledon, C.B.E., M.A.
2.45 p.m.	"Chemistry of Grassland." Professor R. G. Baskett, Agricultural Chemistry Department, The Queen's University, Belfast.
3.15 p.m.	Fifteen minutes' break for tea.
3.30 p.m.	"Recent Developments in Seeds Mixtures." Dr. William Davies, Director, Grassland Improvement Station, Stratford-on-Avon.
4.15 p.m.	"Habits of the Grazing Animal." Professor Martin Jones, M.SC., Department of Agricultural Botany, King's College, Newcastle-upon-Tyne.
4.45 p.m.	General discussion. Opening speakers: Professor W. C. Miller, M.R.C.V.S., F.R.S.E.; Mr. William Alexander, O.B.E., Home Farm, Eynsford, Kent; Dr. W. S. Gordon, C.B.E., M.R.C.V.S.

SECOND DAY, OCTOBER 29TH:

9.30 a.m.	Opening paper: "Grassland in Relation to Animal Health." Mr. G. N. Gould, M.R.C.V.S.
10.15 a.m.	"Parasites and Grassland." Dr. E. L. Taylor, M.R.C.V.S., D.V.H.
10.45 a.m.	Fifteen minutes' break for tea.
11 a.m.	"Major and Minor Mineral Elements in Relation to Animal Health and Pasture Management in the British Isles." Dr. H. H. Green, Ministry of Agriculture, Veterinary Laboratory, Weybridge.
11.30 a.m.	"The Oestrogenic Factor in Subterranean Clover in Australia." Mr. D. H. Curnow, M.SC., Courtauld Institute of Biochemistry, Middlesex Hospital Medical School, London.
11.50 a.m.	"A Factor in Pastures Affecting Muscle Activity." Mr. W. S. Ferguson, F.R.I.C., Jealott's Hill Research Station, Imperial Chemical Industries, Ltd.
12.30 p.m.	Luncheon.
2 p.m.	"Physiological Dysfunctions and Metabolic Disorders in Grazing Animals." (1) "Significance of Vitamins; Acetonaemia; Photosensitisation." Mr. W. R. Muir, B.SC., National Agricultural Advisory Service.
2.30 p.m.	(2) "Hypocalcaemia, Hypomagnesaemia, Hypophosphataemia and Fog Fever." Captain J. R. Barker, M.R.C.V.S., D.V.H.
3 p.m.	General discussion. Opening speakers: Mr. A. Messervy, M.R.C.V.S.; Dr. W. R. Wooldridge, M.SC., M.R.C.V.S., and Professor A. N. Worden, M.A., B.SC., M.R.C.V.S., A.R.I.C.
4.45 p.m.	Summing-up by Professor T. Dalling, M.A., M.R.C.V.S.